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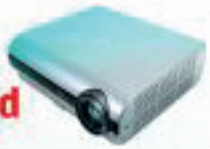
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Jasubhai DIGITAL MEDIA

Editorial

Out With Technology Illiteracy!

HERE IS A LITTLE true story. In 1993, the cops in New Delhi solved one of India's first computer-related crimes—they caught a man selling pirated software in those archaic 5.25-inch floppy disks. The establishment was overjoyed at the cops catching a "high-tech" criminal, and praise did not come at a premium.

Later, the floppies were sent to the relevant authorities as evidence. The worthies stored them, and stored them well—they punched holes in the floppy disks and tied a thick green thread around them and placed the bundle in an office file.

When a friend, then a newspaper reporter who covered this case, related this story, I first rolled on the floor laughing, and then suddenly, everything fell into place—the Delhi cops, their knowledge about technology, and how they tackle "cyber crime".

Baazee.com's country manager Avnish Bajaj, it could therefore be concluded, is not a prisoner of pot-bellied Delhi policemen; he is a prisoner of technology illiteracy, something amply displayed by law makers, law-enforcement authorities, and by the media.

An example of media's technology illiteracy: a New Delhi newspaper recently said that the MMS-Clip-on-Sale case was solved by "cybersleuths" who are "technology savvy" because "they check their e-mail everyday." Should we laugh? Or should we cry?

It is nobody's case to call for an overhaul of the country's IT laws—what you and I should demand is a careful examination of law-enforcement.

Take this hypothetical case (based on the logic on which Bajaj was arrested)—should you or your employer be arrested because someone sent you a photo a naked person over e-mail, and that photo now resides on your company's server or your hard drive? It is a curious situation, and if Delhi's cops had their way, a considerable portion of the capital's population would be in jail.

Chennai cops score almost equal marks in technology illiteracy. When asked how they will catch the person who circulated the video of a woman (allegedly a leading actress from Tamil Nadu) bathing, the investigating officer said, "It is easy to trace the criminal once we track the IP address."

Simple question: What if the pervert used a cybercafé that does not keep records (and we know most cybercafés don't) of their clients? What if the person used a friend's PC, in which case the friend is done for, not the actual culprit?

White collar and sex-related Internet crimes are now glaring at us with unprecedented ferocity. Sadly, however, our law-enforcement agencies depend on serendipity rather than knowledge to solve them.

We should shudder.



Sachin Kalbag Executive Editor

"Avnish Bajaj is not a prisoner of the police, but of technology illiteracy"



sachin_kalbag@jasubhai.com

PS: On a happy note, though, here's wishing all our readers a happy and a prosperous New Year from everybody at Digit. Have a great year ahead!

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YOUR TECHNOLOGY NAVIGATOR

January 2005 • Volume 5 • Issue 1

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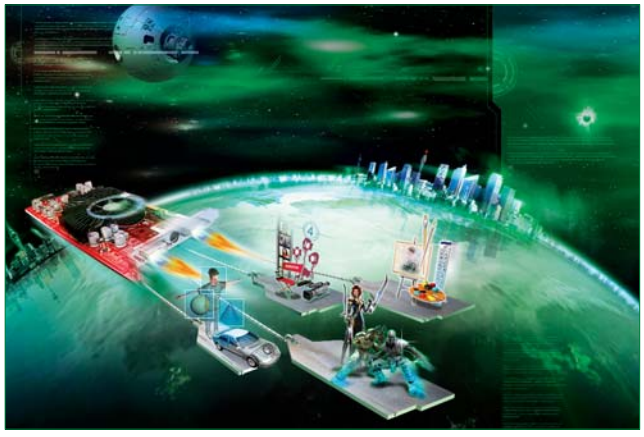


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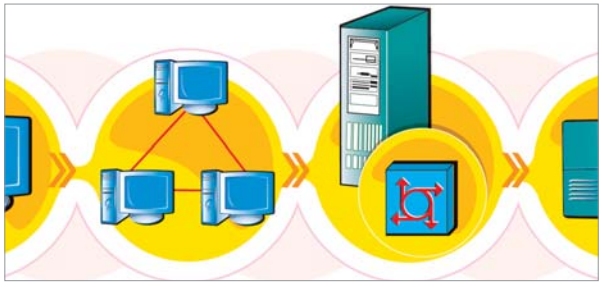
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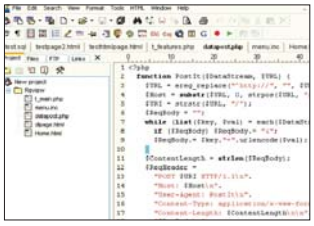
GAMERS

The Incredibles



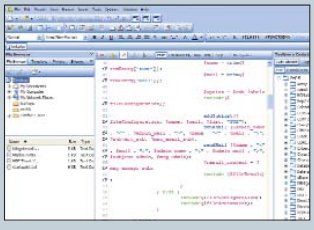
The Incredibles videogame features intense superhero action and adventure combined with the unique graphical style and humor of the film from Pixar Animation Studios

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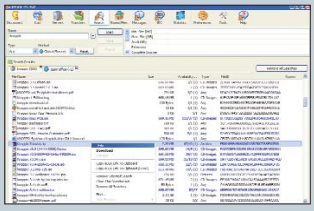
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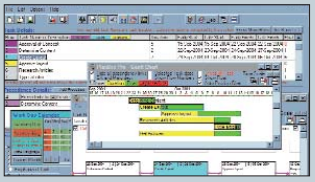
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By Demand

You get to choose what goes on **Digit Interactive**. This month, you chose:

Fedora Core 3, Norton Partition Magic 8





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Digit Reader Poll

This Month's Question

Which category of IT products or services will be highest selling in 2005?

- ☐ Laptops
- ☐ Camera Phones
- ☐ Broadband
- ☐ DVD Writers
- ☐ Digital Cameras
- ☐ MFDs

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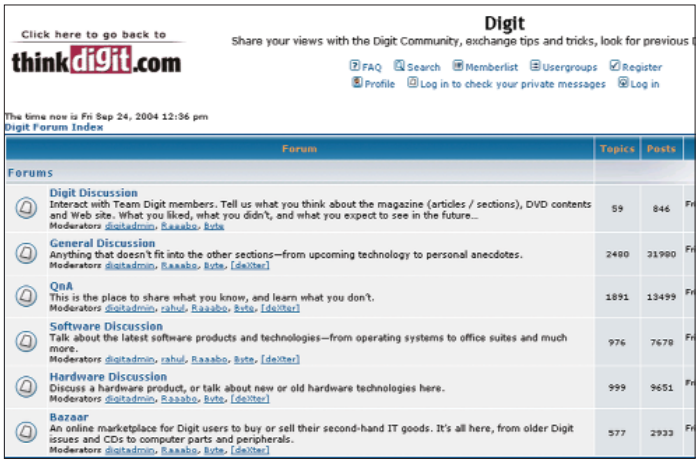
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General Discussion

From *Linkin' Park* to *Doom III*, it's all here

Samsung shows off giant plasma screen

December 16, Samsung unveiled what is possibly the world's largest plasma monitor screen—a 102-inch high-density panel codenamed "Atlas." The resolution is only 1,920 x 1,080, but the contrast ratio is 2000:1—enough to leave most of us drooling.



Petabytes By 2008

The Storage Networking Industry Association (SNIA) of India estimates that the country will have 52.7 petabytes (a petabyte is a thousand terabytes) of storage capacity in the next four years, as against the current 5.5 petabytes.



Enter

Shiamak Davar
Actor

Shiamak Davar, one of India's most prolific dancer-choreographers, has redefined the art of dance. He is known for his unique props, costumes and innovative styles. *Digit* caught up with him on one of his shows.

CELEB GEEK ★ CELEB GEEK ★ CELEB GEEK



What does technology mean to you?
Greek! On second thoughts though, it has opened up new vistas for information, communication and knowledge.

What kind of gadgets do you use in everyday life?
I am addicted to my Nokia 6610. I have a DVD player. I use my Apple PowerBook to surf the Net and to chat using MSN Messenger.

Which are your favourite movies that use a lot of technology?
Finding Nemo and *Shrek* are the best animated movies that I have seen.

What do you surf the Net for?
I use the net for information on musicals, dance dramas, theatre, animals and even terminal diseases like AIDS and on street children.

How do you see technology affecting people?
Technology cannot work in isolation. When blended with art, technology will have a heart, and be of greater service to mankind than be used for destructive purposes.

Preethi Chamikutty

IT WILL BE CHENNAI AND HYDERABAD

Mumbai, Bangalore No Longer IT Hotspots: Gartner

Although Google bosses Larry Page and Sergey Brin chose India's "Garden City" to set up their first offshore R&D unit outside the US, IT research firm Gartner says Chennai and Hyderabad will soon replace Bangalore and Mumbai as the most favoured destinations for offshore projects by 2010. In terms of innovation in the IT sector, Pune tops the list with the highest ratings in skills availability and retention.

The drivers studied include efforts to improve infrastructure, overall availability of skills, quality educational institutions and active political support. The main factors inhibiting growth were increased attrition rates, inadequate infrastructure, escalating costs and lack of quality real estate.

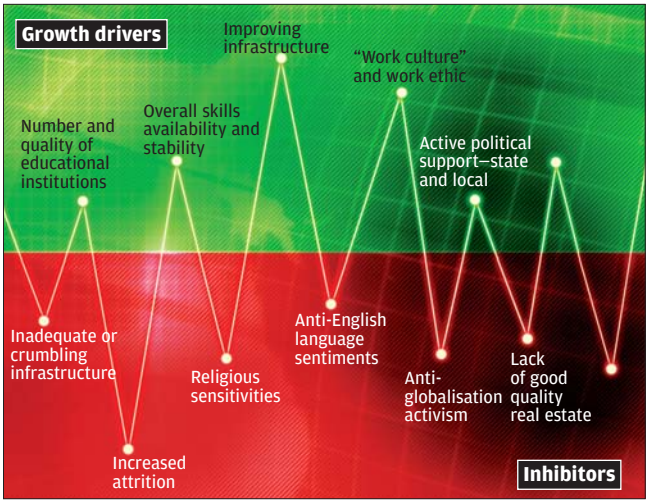
With significant investment, Gartner predicts that Pune, which ranked lowest in infrastructure support, will soon be on par with the other metros in the near future. Mumbai, surprisingly, received the lowest ratings on the "Cost of Life" and "Quality of Living" index.

Lower attrition rates and availability of skilled labour force are likely to be the main factors that will enable cities such as Chennai, Hyderabad and Pune steal a march over the current IT strongholds.

The poor infrastructure gong was sounded in Bangalore recently when software companies including Infosys and Wipro threatened to migrate to other states. Infosys chief N R Narayanamurthy is believed to have written to Prime Minister Manmohan Singh complaining that poor infrastructure and pressure from the local "land mafia" was hampering business development in the city. Rumours that Wipro's Azim Premji may be considering shifting base to Delhi are also flying thick and fast.

Do the software-*wallah*s agree? Ajay Sharma, CEO of Bangalore-based Srishti Software, which develops Knowledge Management products, agrees that that development in Bangalore has not kept pace with growth of the industry. "The Infy and Wipro threats only reflect a pressure point. Unless we have better roads, good power supply and infrastructure, it will be difficult for the industry to grow," he laments.

India Inc needs to get its act together, at least to ensure that we don't lose considerable outsourcing business to our Asian counterparts. Paul Nixon, country manager, Oneyma Consulting, points out that in 10 years, "It may not be India at all which excites the west, but destinations like China and the Philippines. Already, some voice work is moving away from India to the Philippines and one BPO, which also has a presence in



Factors promoting and inhibiting growth of IT, in the top six metros (New Delhi, Mumbai, Bangalore, Pune, Chennai and Hyderabad), according to Gartner's 'IT Outsourcing to India—Analysis of Cities' (Dec 04)

Security Watch

OS defences

The Problem



Marketing-Communications firm AvanteGarde evaluated the performance of several computer systems using the default security settings. The intention was to figure out a machine's susceptibility to being hacked over the Internet. The computers were equipped with Microsoft Windows XP SP1, XP SP1 with a third-party firewall, XP SP2, OS X 10.3.5, and Linspire's Linux.

Damages

XP SP 1 offered the lowest defence; XP SP1 with the firewall and XP SP2 fared slightly better, while OS X survived, as most attacks were Windows- oriented. Linspire's Linux was the most secure. DCOM and LSASS vulnerabilities in Windows made the attacks easier. Machines with low protection held out for 30 seconds to four minutes before losing to the hacker bots.

Precautions

Keep anti-virus software and anti-spyware installed on your system. Update XP to SP2 and always keep your anti-virus tool updated. Use third-party firewalls and regularly scan your hard disk with programs such as Ad-Aware. Make sure that your passwords are safe. Fire up the *Digit* DVD and check out the *Security* sub-section under *Digital Tools* to help protect your computer.

the Phillipines, is considering moving all of its voice work there and just concentrating on data in India, even though the costs of employing an agent in the Phillipines are 40 per cent higher than in India. Although India has the English language advantage at the moment, that could well change with time, and the Chinese are rapidly sprucing up spoken English capabilities in their country. The Chinese infrastructure is also better than India's."

So the moral of the story is that infrastructure is key—whether you are building a software product or a high tech city. Is the Government listening?

DESKTOP SEARCH

In The Purple Corner, It's Yahoo!

Yahoo! Inc. intends to debut a beta version of its free desktop search tool this month to compete with Google and MSN. Licensed from X1 Technologies, Yahoo's tool searches hard disks plus the Web, and is believed to be quicker at indexing and retrieval compared to Windows' search.

Unlike Google's Desktop Search tool, Yahoo's will not operate within a browser aiming to facilitate rapid browsing of search results. Incorporating navigation for a broad range of its online services such as free e-mail, instant messenger archives and address books are the next steps Yahoo! plans to undertake.

Yahoo! claims its product can sift through over 225 different types of data. The company has no plans to place ads in its beta version, but Web searches via the tool will generate sponsored advertisements.

The drawback is that the tool does not index browser histories as yet, and is difficult to port to Mac and Linux systems.

GET REAL

Windows XP Counterfeit Project

Microsoft UK launched the Windows XP Counterfeit Project in December, as a response to the high-quality counterfeit versions of XP that were being detected. The scheme involved submitting the software to Microsoft for analysis if there was doubt about its authenticity.

The testing of the products involved filling out a witness statement, a sequence of computer checks, and information gathering. Counterfeit copies were replaced by legal XP software.

The plan enabled Microsoft to garner intelligence regarding illegal software traders and take disciplinary action against software pirates.

Alex Hilton, licence compliance manager at Microsoft said, "This is a great opportunity for users to confirm the authenticity of Windows XP software whilst helping gather vital information about the thriving illegal trade."

The technology and commerce industry in UK also welcomed the project. "It is important that users ensure they are legally licensed to avoid the risks of purchasing and using counterfeit products," said David Frost, the director-general at the British Chamber of Commerce.

Depending on the success of the UK project, Microsoft will consider establishing similar schemes in other countries with similar problems.

HOT

Desktop Search



Everyone is making a tool for desktop search—Microsoft has launched a Beta tool; Ask Jeeves would have launched theirs by the time you read this; Yahoo! will unveil one this month

NOT

WinFS

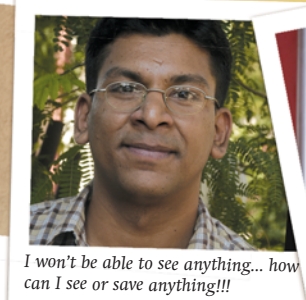


Microsoft's next-generation filesystem which was meant to make searching for files and multimedia on your computer or a network simpler and faster has been pushed back to 2007

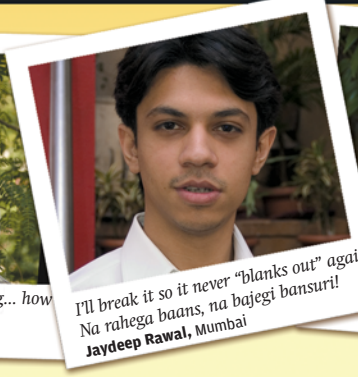
One Silly Question If your monitor went blank suddenly, what would you do?



I'll get another monitor and plug it in. If this doesn't work... chak de phatte!!
Yugbodh Singh, Mumbai



I won't be able to see anything... how can I see or save anything!!!
Pritam Ferrow, Mumbai



I'll break it so it never "blanks out" again. Na rahega baans, na bajegi bansuri!
Jaydeep Rawal, Mumbai



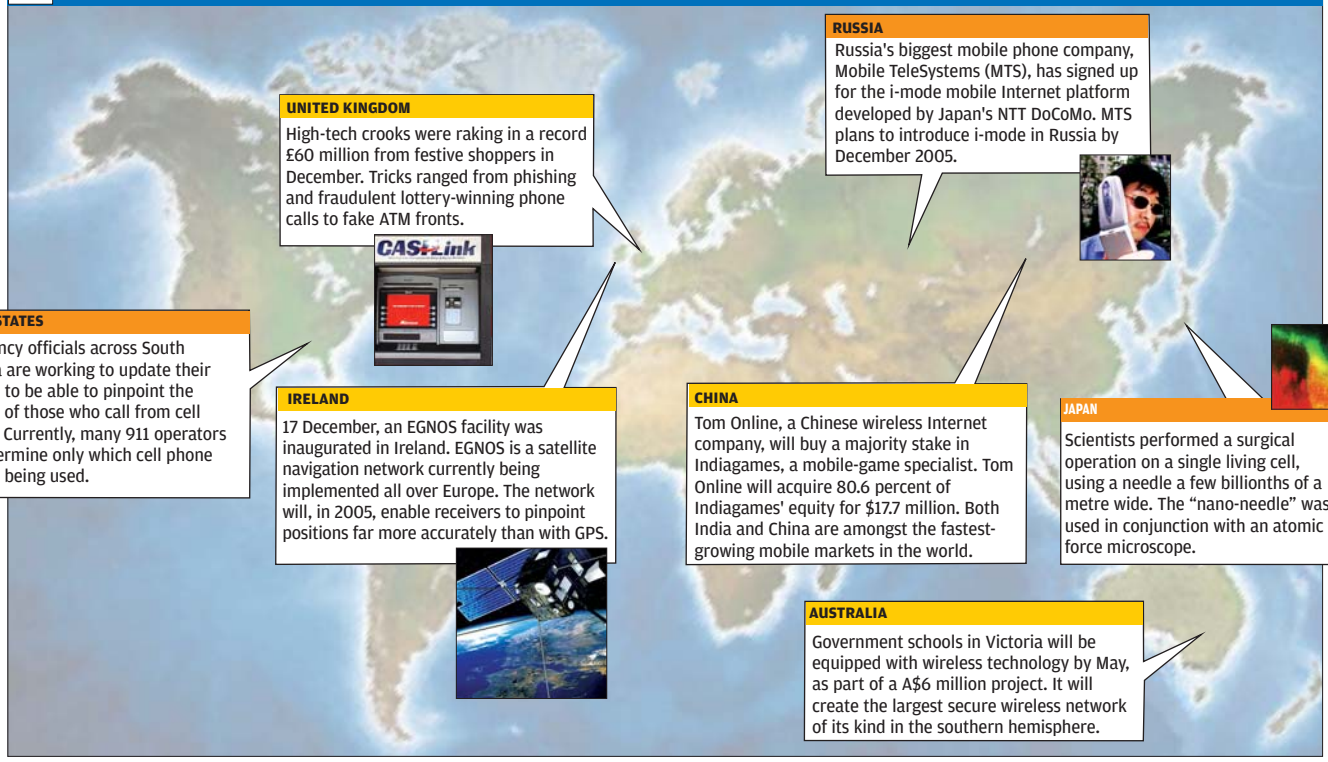
Wait till someone else does something... then blame him
Dilip Jha, UP



Oh, I would thank God for relieving me from the work pressure!
Chaitali Talgeri, Karnataka

The Digital World

A Round-up of Technology News from Across the Globe



RUSSIA

Russia's biggest mobile phone company, Mobile TeleSystems (MTS), has signed up for the i-mode mobile Internet platform developed by Japan's NTT DoCoMo. MTS plans to introduce i-mode in Russia by December 2005.

UNITED KINGDOM

High-tech crooks were raking in a record £60 million from festive shoppers in December. Tricks ranged from phishing and fraudulent lottery-winning phone calls to fake ATM fronts.

UNITED STATES

Emergency officials across South Carolina are working to update their systems to be able to pinpoint the location of those who call from cell phones. Currently, many 911 operators can determine only which cell phone tower is being used.

IRELAND

17 December, an EGNOS facility was inaugurated in Ireland. EGNOS is a satellite navigation network currently being implemented all over Europe. The network will, in 2005, enable receivers to pinpoint positions far more accurately than with GPS.

CHINA

Tom Online, a Chinese wireless Internet company, will buy a majority stake in Indiagames, a mobile-game specialist. Tom Online will acquire 80.6 percent of Indiagames' equity for $17.7 million. Both India and China are amongst the fastest-growing mobile markets in the world.

JAPAN

Scientists performed a surgical operation on a single living cell, using a needle a few billionths of a metre wide. The "nano-needle" was used in conjunction with an atomic force microscope.

AUSTRALIA

Government schools in Victoria will be equipped with wireless technology by May, as part of a A$6 million project. It will create the largest secure wireless network of its kind in the southern hemisphere.

THEY'VE COME A LONG WAY

Intel Inside, But AMD Knocking On The Door

Advanced Micro Devices (AMD) Inc has come a long way from being a low-cost supplier of Intel chip clones to supplying premium parts. According to market research firm International Data Corporation (IDC), AMD took hold of nearly 10 per cent of the CPU market with its Athlon 64 and Opteron range, compared with an earlier 8.5 percent. AMD's average chip price also rose by 10 per cent. The company raised its market share in server chips from 6.9 per cent to 8 per cent, and has 18.4 per cent of the desktop and 9.3 per cent of the notebook markets.

Low-cost product offerings by AMD have been well accepted in the emerging markets of India, China and in Eastern Europe. Also, Dell's decision to withdraw from the Chinese market was in a way related to the popularity of local brands powered by AMD processors.

An IDC analyst added that AMD's strategy of manufacturing server chips and PCs employed by video game enthusiasts assisted its market growth. In mid-December, AMD and IBM improved a chip-making technology called "strained silicon," which boosted semiconductor performance.

Though Intel commands 81.2 percent of the market share, AMD is expected to surpass Intel by 2017.

INTELLIGENT MUSIC DEVICE

What You Want, When You Want

Recently launched by an Indian musical instruments company, "uMusic" or "Intelligent Music" is a revolution in home entertainment systems, and promises to

Three Incredibly Useful Sites

Quizzes, Trivia, And The Like

www.coolquiz.com /quizzes/



Cool Quiz!

Coolquiz.com's site layout is a bit disorganised, but there's lots of fun quizzes here, in various categories. Take your pick—a random quiz, a daily-updated pop quiz, a "Totally Tuff" quiz where you "WILL" learn something, and so on. The site boasts of a total of over 35,000 trivia questions.

www.funtrivia.com



FunTrivia.com

"From Harry Potter to Particle Physics ... and *EVERYTHING* in between!" That's what funtrivia.com says about itself—with more than 658,000 questions online. The categories are innumerable. Quizzes are organised not only topic-wise, but also by difficulty. A must-visit.

www.queendom.com/mindgames /quizdom/



Trivia Quizdom

This site boasts of a total of 178 categories. The categories, of course, span all interests, the features ones being "science," "society and culture", "people", and so on. In addition to quizzes, there are also interactive tests, mind games, polls and surveys, and more.



Photograph Mexy Xavier

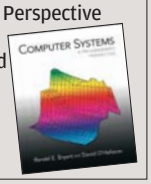
Beat That!

Digit Caption
"And that one's for Rs 30 a kg!"

Every month, *Digit* will carry a caption for a photo. Come up with something funnier, and beat the *Digit* team at their own game!

Last Month's Winner!
Samraat Reddy, Chennai is the winner this month for his caption: Behind every man, oops, Robot, there is a woman!

Send your captions to **beatthat@thinkdigit.com** and win a book!
Computer Systems
A Programmer's Perspective
By Randal E Bryant and David O' Hallaron
Published by Pearson Education



outdate CDs with its storage capacity of almost 500,000 songs, and its ability to "read into a listener's mood and play songs to suit it".

The device is "much more than hard disk technology," claims general manager Ratish Pandey. "It is infused with intelligence such that it automatically skips, tags, retrieves and sorts a listener's preference



Illustrations Shayam Shriram

instantly," he adds. "If a listener does not like a particular song and presses the "negative" button on the system, the device skips the song every time the track is being played," he says. A "positive" button on the device indicates a liking for a particular song, which the system will automatically repeat.

The system can "customise" songs by recognising the frequency with which it is played. If you opt to listen to a popular song more than once, the system remembers to store and replays it. "The biggest advantage is one does not have to produce a playlist every time a song is to be played. Since the system stores the contents of almost 350 CDs, citing a category would suffice," says Pandey.

HUGE GROWTH EXPECTED

Mobile Gaming In India

The Indian mobile gaming business currently represents five per cent of the world market. It is in its infancy, with half a dozen major game developers and four service providers offering games to subscribers.

A few technology companies are now planning to transform India into a global hub for generating gaming content.

India is seeing an explosive growth in the mobile phone user base, and the number of mobile phone subscriptions has already overtaken the number of landlines. Analysts say the generation of gaming content for domestic as well as overseas clients may become the Next Big Thing after IT outsourcing.

According to In-Stat/MDR, a US-based tech industry research firm, the Indian mobile gaming market is poised to generate $336 million in revenue by 2009.

"With half a dozen major developers, along with a variety of start-ups, we expect India's influence to grow in the evolving mobile gaming sector," said Clint Wheelock, director of In-Stat/MDR. "India has a fast-growing wireless subscriber base of its own, and its high-quality and cost competitive software industry is well positioned to be a key global player in gaming content," Wheelock said. "It is a multi-million dollar market, both in terms of software development and end-user consumption." The number of people playing games on cell phones will swell during the next few years, generating billions for developers, Wheelock added.

POSES SECURITY THREATS

'KaZaA Is Spyware'

The immensely popular peer-to-peer program KaZaA has been rated as the No 1 spyware threat on the Internet, according to Computer Associates International.

CA found that KaZaA posed a greater threat than other programs in its list of top five spyware because of its widespread popularity; KaZaA claims that the program has so far been downloaded 214 million times. Classifying a popular software such as

KaZaA as spyware is a delicate matter. CA admits that this creates difficulties in attaching labels.

Said Simon Perry, vice president of security strategy for CA, "Kazaa does something useful. I'm not going to say that it doesn't. But turn that around—you're allowing millions of strangers onto your machine. (KaZaA) is No 1 because of the amount if copies it's got out there."

Perry said that the difficulty in defining spyware precisely was one reason why the company often referred to certain programs as pests. He said that the definition of a virus is clear today, but "spyware" is a fuzzy area.

But what's in a label? Everyone who uses P2P software already knows the risks involved, and it is an informed decision that makes them use the software.

10 MILLION DOWNLOADS

Firefox On A Sprint

Firefox, the open-source challenger to IE, crossed the 10-million-download mark on December 11.

As Mozilla expected, Web surfers are continuing to move away from Microsoft's market-dominating Internet Explorer. This milestone highlights growing frustration with the security vulnerabilities that have dogged IE in the past few months. IE's market share has now dropped to less than 90 per cent: Dutch market researcher OneStat.com reported last month that IE's market share had slipped to 88.9 percent in the third week of November, down five percentage points from the figure in May. Mozilla-based browsers including Firefox rose to 7.4 percent, up five percentage points since May.

Microsoft has not remained silent about these numbers. It has claimed they do not represent corporate users. "It doesn't jibe with what WebSideStory shows, and what neither of these count is corporate intranets where users aren't actually hitting the Web," said Gary Schare, Microsoft's director of product management for Windows, about OneStat's statistics.

GENDER BENDERS

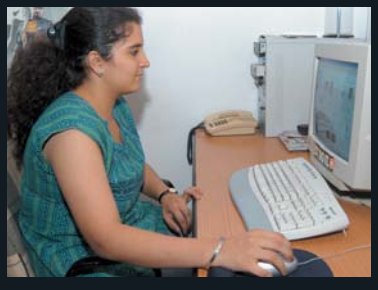
Taroon Ahooja vs Geetanjali Singh

Delete the *My Documents* and *My Recent Documents* tabs from the Start Menu and put them back on.



7 min 03 sec

A little doubtful, he manages to delete the *My Documents* tab in under 2 minutes time. But where is the *My Recent Documents* option? Searches high and low: Control Panel—Administrative Tools? Taskbar and Start Menu? Goes back to the Start Menu. Uses the much helpful Help and Support option. Types the question in the search bar and navigates his way to the solution. What a task!



7 min 0 sec

She started off confidently, but did take some time to finish the task. First drags the two items and puts it on the Desktop, but alas, it's still in the Start Menu. The search begins....is it open? explore? what is it? Goes to Properties, but can't find the solution. Next stop—Control Panel. Ah! There is a *Taskbar and Start Menu* Option. Opens that, goes to Start Menu > Customise > Advanced. Bingo! There it is. Clicks '*Don't display this item*' for *My Documents* and de-selects the tick for *Recent Documents*. Phew!

GOOGLEBRARY

Are You The New Librarian, Mr Google?

Adding to its already feathered hat, Google has announced that it will work with Stanford and Harvard Universities, amongst others, to digitise out-of-print and copyrighted works.

The California-based search giant announced relationships with five major libraries, including those at the University of Michigan and Oxford University, as well as the New York Public Library, to create digital copies of some books so that they may be searchable using Google. The company also began sampling some works already scanned for Google Print, the company's searchable index of books that it formally unveiled in October.

Susan Wojcicki, Google's director of product management, said the project will evolve over several years. "Libraries have been the keepers of information for centuries," she said. "We are excited to unlock that wealth of Information."

The scope of every relationship that Google would share with every institution,

ON THE HORIZON

Talking To Your PC

"@#$&* Computer!"

The next big wave in person-to-machine interaction will take us beyond pounding on the keyboard and into the realm of natural voice interaction. The seed has already been sown; you can see signs in software such as the latest version of the Opera Web browser, which uses IBM's ViaVoice application. Ask it to speak out text for you, or speak to it and watch it fill online forms. This is rudimentary tech, however.

Imagine talking to your computer like we do with another person, a complete conversation beyond "yes," "no," and "reboot." Say you are driving around in your car and wish to go to Nehru Place, Delhi. You ask your car's computer to give you the necessary directions (which it finds via GPS), and the computer replies with spoken words. To help it "listen" better, over the ambient Delhi noise, cameras will track your lip movement, the computer will literally read your lips.

A big turn off about computer speech is, well, their voice—unnatural, metallic, cold. IBM is researching a simple solution for that as well. It creates samples of human speech, microseconds long, and weaves these snippets into "spoken" sentences which sound very close to the human thing. Moreover, far from coming off as uncaring when it declares "your PC is about to explode," IBM's tech uses "expressive synthesizers" which have a range of expressions—tonal variations to fit "good news" and "bad news" statements, for example.

Microsoft, too, is big on speech. In various offline forums, Bill Gates has singled out speech technology as something to look forward to. Indeed, Microsoft's next version of its operating system, meant for handhelds, is likely to incorporate speech recognition for both data input and

WHATWHENWHYWHEREWHOHOW

W5H

WHATWHENWHYWHEREWHOHOW

What is WiMAX?
WiMAX (Worldwide Interoperability for Microwave access) is touted as the next generation of WiFi, and will be able to connect computers in up to a ten mile range without wires. It can provide connectivity at broadband speeds.

How does WiMAX work?
Imagine a beam of bandwidth that supports data-transmission rates of up to 70 megabits per second within a 30-mile radius of a WiMax antenna—that is basically what WiMAX is. A network provider would set up base stations consisting of one or more sectors that are connected to their edge, and core networks via wireless or wireline connections. In the future, WiMax vendors hope that the technology will be able to communicate with a special chip in wireless devices.

Who is on the WiMAX forum?
The Forum was founded by Nokia, Ensemble Communications and the OFDM Forum, and the membership list includes Aperto Networks, Proxim, Wi-LAN, Intel and Fujitsu.

Why do we need WiMAX?
WiMAX can enable broadband access over entire towns and, with sufficient base stations, entire districts. One good use for WiMAX is to solve the "last mile" problem with cable and DSL—in which transmission from the ISP to the home or office is slowed down due to the wiring.

When will WiMAX reach portable devices?
WiMAX is expected to be incorporated into laptops and PDAs in 2006. Entire cities could become "Metro Zones" for portable outdoor broadband.

Where can I find an instance of WiMAX?
Intel was trying to make Houston County, Georgia, fully connected via Wimax. As of June 2004, the trials were a huge success.

Back To School

Touted as the successor of the extremely popular SDRAM, "DDR"-SDRAM was merely an idea some years ago. Intel had pitched their Rambus RDRAM as the future performance memory type and it seemed like DDR-SDRAM would remain an idea, *sans* big daddy Intel's backing.

Now, the super fast RDRAM (found in high-end Pentium 4 motherboards) is expensive, and has fallen out of vendors' favour. Double Data Rate Synchronous Dynamic RAM, which costs less, is currently everyone's favourite.

DDR SDRAM helps achieve greater bandwidth than ordinary SDRAM by transferring data on both the rising and falling edges of the clock signal. This doubles the transfer rate without increasing the frequency of the front side bus. A 100 MHz DDR system, therefore, has an effective clock rate of 200MHz.



DDR RAM provides a memory bus clock rate of *2 (for dual rate) *8 (number of bytes transferred). This basically translates to a transfer rate of 1600 MB/s for a bus frequency of 100MHz.

DDR RAM speed, thus, has a dual nomenclature—that of its effective clock rate (e.g. DDR 200) and its transfer rate (e.g. PC 1600). The suffixed number (DDR 200, DDR 400) designates the speed that the chip is guaranteed to run at. DDR SDRAM DIMMs have 184 pins (SDRAM has 168), and operates at a voltage of 2.5 V (3.3 V for SDRAM)—a factor that can significantly reduce power consumption.

DDR-II has some modifications to allow for higher clock frequencies, but operates on the same principle as DDR. It is now hitting the market. To counter DDR-II, there's Rambus XDR-DRAM. DDR-II may soon become the standard, though, as XDR lacks support. DDR-II is available at clock rates of 400 MHz and higher. AMD has recently introduced support for DDR—the AMD Athlon XP 3200+ requires DDR 400.

though, will obviously vary. For example, Harvard Publications director Peter Kosewski said the university is in a pilot program with Google to scan only 40,000 randomly selected books from its collection of 15 million. By going through the process, Harvard will be able to vet issues such as care of the books and copyright concerns and determine whether it is appropriate to proceed.

Google has long said it plans to make the world's information accessible and searchable, and a cornerstone to its mission would be to bring libraries to life online. Google itself was born out of a library digitisation project at Stanford, Wojcicki said, and its founders had planned all along to build a vast searchable index of books. Only now has the company found the technology and resources to work with libraries to scan their volumes, she said.

Still, the company must navigate tricky issues of copyright. Because libraries own only copies of copyrighted books and don't hold the rights to reproduce those works for wide distribution, Google will likely have to deal with publishers to share revenue on advertising, except only a small portion of material or promote the purchase of books on third-party sites such as Amazon.com, all of which Google said it plans to do. The company said that initially, it will only display biographical information for copyrighted works.

For books in the public domain—books no longer protected by copyright—Google will allow people to search and read the entirety of the work. Oxford, for example, has agreed to let Google scan all its books published in and before 1900.

Many universities tout exclusive collections of books or letters, and for this reason, Google may also run into trouble obtaining clearances down the road to meet its goals. Harvard's Kosewski said that its test is only with a small number of books and that it would require an entirely new set of considerations if the university were to grant Google or others the ability to scan such works.

Rivals are already jockeying for similar utility. Microsoft, for example, has built encyclopaedia answers from its Encarta software into search results for its new proprietary engine. Last year, Yahoo! began a content-acquisition project to digitise more searchable material. And Amazon features a search-inside-the-book tool so that people can browse works digitally before buying.

BROWSER WARS II

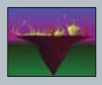
Firefox On The Hunt

Just as one browser war is barely coming to a boil, the Mozilla Foundation is all set to launch another attack. The fact that Firefox has been downloaded nearly 10 million times since it hit 1.0 seems to have given them the confidence to announce that it will also enter the mobile browser market and take on current leaders Opera.



Why, when Firefox is just picking up steam in the main arena, is there a development team working hard to find another Goliath to battle with? According to Doug Turner, project leader of Minimo, the reasons are clear: Mozilla's browser car-

Web Alert - 5 Great Web Sites



www.parnasse.com/vrml.shtml

VRML (Virtual Reality Markup Language) enthusiasts have created lots of VRML worlds for you—worlds that you can navigate in, in 3D. This site is a collection of such worlds. Just google on "VRML worlds" for more such. For a VRML plugin, which you'll need, head to www.parallelgraphics.com/products/cortona/



www.airbagindustries.com/introvertster/index.php

Introvertster "is an online community that prevents stupid people and friends from harassing you online." Sign up here so you can "avoid invites to chat, make it impossible for a friend to send you an IM," and generally, spread the idea that you don't care too much for personal communication.

www.straightdope.com

This is a fun site packed with information about fun everyday things. These things include articles, FAQs, and answers on stuff such as whether Vikings really wore helmets, whether there ever was a female Pope, and so on. There are cartoons, there's a message board, and you can sign up for the mailing list.

www.kuro5hin.org

"Technology and culture, from the trenches"—you've got to take a look at the site to believe the sheer range of content: there's something for everyone. Sections range from science and technology to politics and media. You can write articles too, besides commenting on and discussing existing ones. The site is copiously hyperlinked, which is fun.

www.infoanarchy.org/

This is an eminently accessible news and discussion place for the more technologically and Internet-oriented amongst us—for example, there's lots of the latest P2P news. There's a Wiki, there are diaries by members, there are news stories, and so on. As in Kuroshin, you can put up your content on the site. Very informative, very "with it".

ries no royalty fees and can run on just about everything. "We can be ported to many platforms that Opera can't... Mozilla has been developed to work on every flavour of UNIX and every type of processor, chip or widget set."

Opera is the Microsoft of the mobile browsing market and is unlikely to take Minimo lightly after what Firefox did to Internet Explorer's market share. A spokeswoman with Opera questioned the Foundation's experience in the mobile market saying, "We have been working on mobile browsers for six years... These are interesting comments, although I am not sure that delivering on many flavours of UNIX is going to get you onto very many mobile phones."

For the moment, though, it appears that the Minimo team has a fair bit of work to do before really taking on the might of Opera. Their application is targeted at portable platforms with 32 to 64 MB of RAM and Linux, which seriously limits the appeal of the browser. Opera's browser runs great series 60 phones without a hitch, and can be installed on just about any other next generation mobile device.

Minimo may have more to contribute than a simple HTML browser. Developers have been churning out new ideas for improving the usability of Web sites on small-screen devices, such as re-flowing content to eliminate horizontal scrolling without discarding page elements, page zooming, and non-linear navigation of hyperlinks. If this team can find a way to shrink the mammoth Mozilla code-base into something that will run well on a cell phone as well as continue to innovate, Opera may very well find themselves in the midst of their own browser war.

COMPUTER LITERACY

And This Is How You Open A Document Ma'am

In an attempt to increase computer literacy in Indian schools," Microsoft launched the "Connected Learning Program" in about 150 top schools in India. To



facilitate this, they launched a low-cost version of MS Office; "Office Student and Teacher Edition 2003" (Rs 6,950).

The product aims to leverage technology to make the learning process more effective and fun for both student and teacher. Student-Teacher Office enables students to work on school-related projects from home. Special features include a research task pane, integrated help, interactive online training, templates for educational and home tasks, and an improved Reading Pane in MS Office Outlook 2003.

TERRORISTS OR GAMERS?

CIA to spy on IRC

It has recently become known that the Central Intelligence Agency (CIA) has been funding research into IRC monitoring.

According to a report on *ZDNet UK,* money has been received by the Rensselaer Polytechnic Institute in New York. One of its proposals received almost $158,000 in grants, which will enable it to build a program for "silently listening" to IRC channels and logging messages. The two men behind the proposal, Bulent Yener and M Krishnamoorthy, state in a paper released in June that their work "could aid [the] intelligence community to eavesdrop in chatrooms, profile chatters and identify hidden groups of chatters cost effectively."

One can't help but worry that this is, in fact, legit. The proposal mentions monitoring the undernet network: far from being the hive of terrorists that the CIA might think, all they're likely to catch are song and movie swappers.

Compiled by Meera Vankipuram, Ahmed Shaikh, Ram Mohan Rao, Aditya Kuber

Buzzword of the MONTH

Indexing

With so many desktop search tools to choose from now—whereas there were none just a couple of months ago—indexing has become a buzzword. Complaints abound about what Google Desktop Search does not index. MSN Desktop Search Beta is actually just an extension of the indexing service built into Windows 2000 and XP. Copernic's offering boasts of "up to 200 per cent faster indexing". And in HotBot's tool, you have more control over the indexing process.

Lead Feature

O Animator, Who Art Thou?

A sketch, a drawing, some animation and a movie... all in a day's work

Meera Vankipuram

Step into Crest Communications, and your first impression is that it resembles a busy hive. Behold a hundred animators poring into their workstations, heads riveted to their screens—welcome to one of India's biggest and best-known animation studios!

Nestled within a multi-storey building, in upmarket Worli, Mumbai, Crest is home to several budding animators and special effects professionals. Yet, the insanity associated with the art is not reflected in the environment. Bright attire and friendly banter abound, but post 10 am, the cubicles morph into sacred altars where ideas are born—"*shhhhhhh*," insists someone when I raise my voice to ask for directions.

Is this really the animation studio that earned an Annie Award nomination for *Jakers! The Adventures of Piggley Winks* (a laugh-a-minute cartoon strip broadcast on PBS Kids in the US), and may bag a Disney project soon?

Who are these people we call animators? *Digit* spent a day with three members from the Crest world to answer: was it all just about Maya and 3DS Max, or is there more to an animator than just fancy hardware and software?

The Cast

Mr Incredible: *Upinder Dhaliwal, 24 year old and an Aquarian*
Occupation: *Animator*
Undercover: *"Proud Sardarji," with his heart in the Armed Forces*
Education: *Symbiosis (BCom), Arena Multimedia (Photoshop), Digital Concepts, Pune (3D Studio Max Release 4), Vancouver Film School, Canada (a course in animation)*

Buzz Lightyear: *Rajarajan, a 24-year-old Piscean*
Occupation: *Background artiste, Team Leader, R&D*
Undercover: *An exasperated son still trying to convince his parents that animation is indeed a respectable profession!*
Education: *VISA Silicon Graphics degree from Pentamedia Graphics (Chennai), diploma in textile design, CAD/CAM courses*

Princess Fiona: *Shilpa Bobade, a 33-year-old Piscean*
Occupation: *Compositor (2D & 3D)*
Undercover: *A doting mom*
Education: *Degree in Commercial Art from Raheja School of Art, Mumbai*

Upinder, Raj and Shilpa are part of the *Jakers!*.. team, a series that tells the story of Piggley Winks, a cheeky eight-year-old pig, and his friends Dannan the Duck and Ferny the Bull on Raloo Farm in Ireland. A typical team includes eight to 10 animators, two to three background artistes and two rendering artistes. Although there are several stages in the animation process, we focus on three aspects—character animation, background creation and compositing.

To get a fix on what animators exactly do, here's a quick tutorial: an idea is first incubated in the collective head of the producers of a show or a film, who then invite sample showcases (dubbed "pilots") from top studios across the globe. Once a studio wins a project, the team gets down to the basics—drawing board, pencil and paper. Trained artistes then sketch the characters with inputs from the producers and animators.



Making Faces

Character animators create the characters and movements associ-

Shilpa Bobade, Compositor

ated with specific scenes. The animator is pretty much the "model" for the character and simulates body movements and facial expressions that he/she thinks will suit the character.

Upinder is an animator—"I am the actor behind the characters you see in an animated series!" From mimicry to lip-syncing dialogues, which are recorded as audio, his movements, which are recorded on video, are transposed using Softimage XSI onto a digital character's movements. "Piggley, for example, is a naughty character—like me! I have to create movements according to the mood of the scene."

His "workspace" is filled with sketches of a character-in-progress. Walk cycles, facial expressions, test sketches—Piggley's movements have a hundred different variations on paper, before being "born" on Upin's PC.

So what does Upin do all day? The first half hour involves chatting and e-mails. But soon after, Softimage XSI takes over as the sole mate, demanding complete and undivided attention. With eat-your-heart-out hardware specs (2 GB RAM, an Intel Pentium4 processor, a GeForce Quadro graphics card, an 80 GB hard disk, a 17-inch monitor), it's not hard to decipher why!

"No distractions while at work. No MSN, no chat." And music? "Rock, of course—Metallica, GnR, Linkin Park." ("Music does distract us a bit, though," he confesses.)

Caffeine keeps his system running... so lots and lots of coffee too!

After a hard's day's work, Upin and his friends head to Starcity in Mumbai for a movie. "Too few women in the animation industry, *yaar*!"

Out of Crest's 350-odd employees, there are hardly 40 women. "I do go to a club and let my hair down once in a while."

So are work hours always "official"? "Creativity is not time-bound. Although we do have work hours, a five-second shot could take several days and nights. Sometimes, I have worked straight weekends," says Upin. "Not any more, though! Privileges of being a senior animator," he adds dryly.

My Favourite Things!

What makes these animators tick?

The Movies They Love

Dhaliwal: *Kal Ho Na Ho*, *Veer Zaara* ("only for the camerawork!"), *Iron Giant*, *Toy Story*, *Lord of the Rings*

Raj: *Monsters Inc.*, *Finding Nemo*, *Ice Age*, *American Pie*

Shilpa: *Pet Aliens* (a cartoon series), Disney films

Their Music Playlist

Dhaliwal: Metallica, GnR, Linkin' Park

Raj: Pink Floyd

Their Software Weapons of Choice

Dhaliwal: Softimage XSI, Alias Maya (character animation)

Raj: Softimage XSI (BG)

Shilpa: Shake (2D) and Animo (3D) (compositing)

The Ambience Man

Once the characters have their, well, character, the team has to work on other elements such as texturing, colouring, lighting, and shadow effects, based on the scene. The background artiste, meanwhile, is working on the environment surrounding the character—from the furniture to the sky to overhanging vines.

Raj, a former background artiste and now team leader ("involved in top secret R&D activity!") is in charge of creating the background images for Piggley and his friends. These are created part-by-part and then later merged.

And A Team Leader's Workday?

Raj works on Softimage to create background images relevant to each scene. Raj builds the



Photogrphs **Sherwin Crasto (Fotocorp)**
Imaging **Shaym Shriram**

Upinder Dhaliwal, Animator

scene bit by bit—the fireplace, the floorboards, the attire, even the material of the clothes worn by the cartoon characters is carefully chosen. "In between, I receive SMSes from team members with innovative excuses for not turning up...", he jokes.

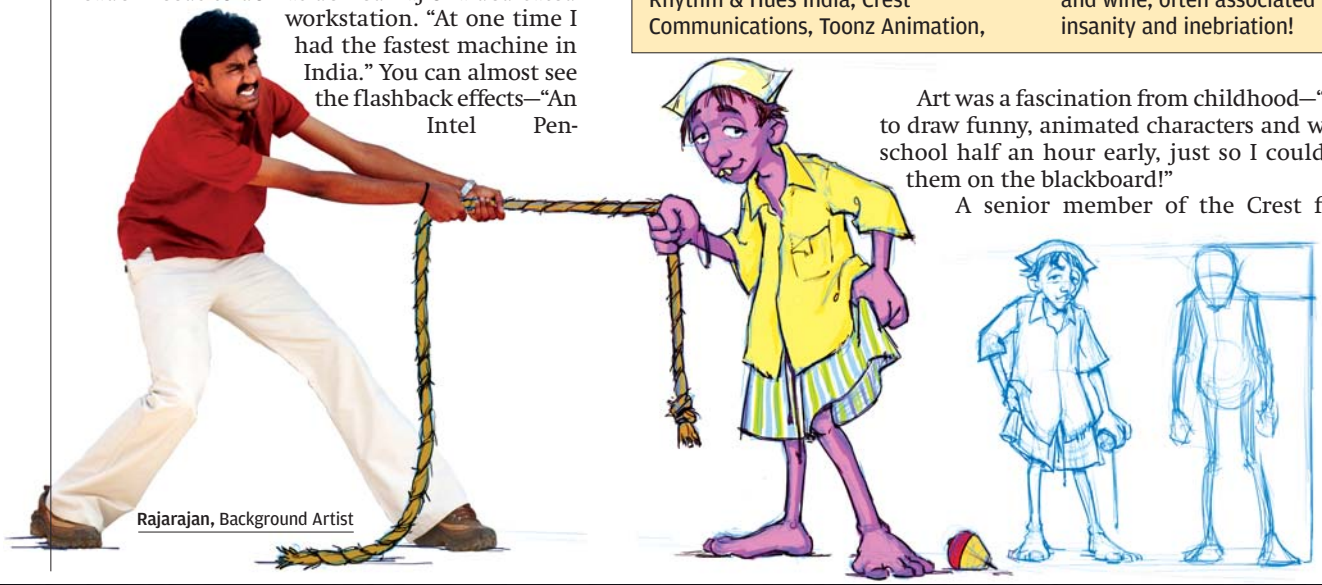
Oh, and as team leader, Raj has meetings to attend, called "dailies" by the insiders.

Tea and nicotine keep his system running—several smoke breaks daily.

8:00 pm sees Raj—incidentally, an avid gamer—wooing *Doom 3*, going bowling or visiting nearby pubs. "Mumbai's a happening place!"

A college lecturer's son, Raj has two sisters. He is popular with his nephews, although his dad insists he should come back to Dindigul and get a "proper job." "I've brought several of my friends into the industry," says Raj with a smile. Sure enough, Tamilians abound at Crest!

But all the scuttling around that a team leader needs to do has denied Raj of a dedicated workstation. "At one time I had the fastest machine in India." You can almost see the flashback effects—"An Intel Pentium4 Xeon, in a dual-processor configuration with HyperThreading, with 4 GB of RAM, and a 3Dlabs Wildcat video card." We feel his pain.



Rajarajan, Background Artist



Merging It All

Once the characters and background are ready, the compositor works on merging the character with the background. Facial expressions, music and voice-overs complete the job.

"The compositor basically puts together all the layers—characters, background, shadows, lighting," says Shilpa, who has to ensure that there is perfect harmony amongst the individual elements, while creating the final package.

Art was a fascination from childhood—"I used to draw funny, animated characters and went to school half an hour early, just so I could draw them on the blackboard!"

A senior member of the Crest family, Shilpa has been around for 10 years. She started out as a visualiser, handled pre-press, animation, worked as an ink and paint artiste, did 2D and is now into 3D compositing.

Shilpa's three-year-old son Ved is her biggest fan. "My son is very excited about my work. We watch a lot of films together," she beams.

Oh, and her days involve only work! She reaches office around 11 am—work and meetings keep her busy. "I leave around 10:30 pm and even work overnight at times. It's a stressful career, but it's a choice we've made."

Quiz her on why there aren't too many women around in the industry and she says: "It is a high-pressure career. My family has been

How It's Done: Making It Big In The Animator's World

The Courses Involved

Basic modules in 3DS Max, Alias Maya, or Avid SoftImage XSI offered by institutes such as Arena Multimedia, Pentamedia, ZICA. Or a BA/MA in Fine/Commercial Art offered by institutes like JJ School of Arts (Mumbai), National Institute of Design (Ahmedabad) or any of the Government Arts Colleges. Or Visual Communication/Mass communication courses from places like Symbiosis (Pune), Loyola College (Chennai), Sophia Polytech, Xavier's Institute of Comunications (all Mumbai), Jamia Milia, IIMC (Delhi)

The Companies Involed

Rhythm & Hues India, Crest Communications, Toonz Animation, Maya Entertainment, UTV Toons, Zee Institute of Creative Arts (ZICA), 2NZ Studios, Prasad Studios, Acropetal, Padmalaya Telefilms, UTV Software Communications (UTV), Pentamedia Graphics, Jadooworks.

The Gods to Worship

Ram Mohan: One of the pioneers of animation in India, Ram Mohan is considered by many to be the "Bhishma Pitamaha" of the Indian animation industry.

Shyam Ramanna: Promoter of Crest Communications, son of late nuclear physicist Raja Ramanna, SFX and 3D guru. He is currently based in Bangkok.

Dionysius: The Greek God of fertility and wine, often associated with insanity and inebriation!

The 'Incredible' Kamal Mistry

The man behind the year's most talked about animation movie takes us behind the scenes



Photograph Jiten Gandhi

Preethi Chamikutty

You have seen the movie, you fell in love with the characters, now meet the man behind *The Incredibles*—Kamal Mistry, the Gujarat-born, New Zealand-educated technical director at Pixar. Founded by Apple CEO Steve Jobs, Pixar is undoubtedly the world's leading animation studio. Mistry speaks on what goes into the making of an animation blockbuster.

The Magic Is The Story

"At Pixar, we concentrate on the story. Next comes the storyboard. Each and every frame is first drawn there. Then come story layout, modelling, shading, building characters, building models, sets and props, hair shading, and lighting."

Making Hair

"I was mainly involved in the creation of the hair for the characters. We wanted a 'cartoony' yet real look for the hair. Modelling was done in Maya, including the sets and props. We used Marionette, an in-house animation software, to make hair. We first made key hair strands and then wrote the code that made the hair in between. The next step was to make it wavy. For this, we made some key strands on the model so we could understand what it would be like. Maya already had tools to comb hair, so that was easy."

A Hairy Syndrome

"Syndrome (a character in 'The Incredibles') had the most complicated hair—it always stood on end. So I first made a tube first with the key strands, and then filled it with the other hair. This was mainly accomplished with the help of MEL script." (MEL stands for Maya Embedded Language and is used to create scripts that automate processes in Maya). "With MEL, we could create programs that performed tasks within the software. For hair, we wrote many scripts that helped us groom and sculpt hair on all characters.

"The next step was the simulation of the hair we had created. Before Voilet, hair beyond shoulder length was theoretical. Getting the right simulation for her hair was a real challenge. Initially, we tried using cloth strips for hair, but it is



unsuitable as cloth behaves differently. It was then worked out with the help of velocity smoothing algorithm and our own simulator program."

Giving Characters A Soul

"For the character articulation of *The Incredibles,* we developed software that gave us the ability to create bones and muscles, and then skin that would sit on the bones and muscles! We had the ability to tweak the bones, the muscles as well as the skin. This was necessary to create the look of characters like 'Mr Incredible'.

"Character articulation was a real challenge. For 'Edna', we had to do a variety of facial expressions. To get the required outcome, we made a bone-muscle-skin set up where we preserved the volume of muscle as they contracted and expanded. In the muscle-bone system, the muscle would drive the skeleton and the end-result drives the skin. In order to avoid mathematical complications, we made characters that could be manipulated in real-time. Our emphasis for the facial expressions were on clean lines. Director Brad Bird told us to push the character to do as many things as possible.

Bam! Boom!! Kapow!!!

"After working on hair and characters, the next task assigned to me was the creation of explosions. The director as well as the Art Department wanted to have explosions with 'tentacles' or 'fingers'—where the explosion would start from one point and explode outwards with the tentacle or fingery look. We developed an explosion simulation set up within Maya, where we would draw curves to denote the direction and then simulate the explosion, given those curves. This was all possible with the help of MEL scripts within Maya. "We mostly used Maya's fluid dynamics for explosions. For this, colour heat value and density was considered. Explosions were done using particle dynamics and fluid simulation."

In A Nutshell

"Making *The Incredibles* was a lot of hard work and fun. Today, when we look back, there is a sense of achievement. My favourite scene in the movie is when Dash gets to run really fast and in the process moves through many sets like forest, land. There was a lot complexity involved, the motion blur, the blur on his feet; it was all very daunting."

preethi_chamikutty@thinkdigit.com

extremely supportive of my work and I've been able to focus on my career." And what has ten years in the animation industry taught her? "I think women have more patience than men!"

The Final Frame

Synergy would best describe the work environment at a place like Crest. Like dedicated worker ants, heads buried in their workstations, the 250-member strong Team Crest works together to create the "picture perfect scene". Ideas are generated on the go, thrashed at meetings, and only the best ones make a successful journey to the big screen. "It takes us about a month to create a single, 22-minute episode!" says Dhaliwal. His impish smile does not give away the stress, the late nights, the intense pressure of deadlines... yet, at the end of the day, nothing beats the satisfaction of a job well done.

As we walk away from Crest, Sherwin, our photographer, remarks thoughtfully, "At 24, these guys are in a prime spot." You bet. ■

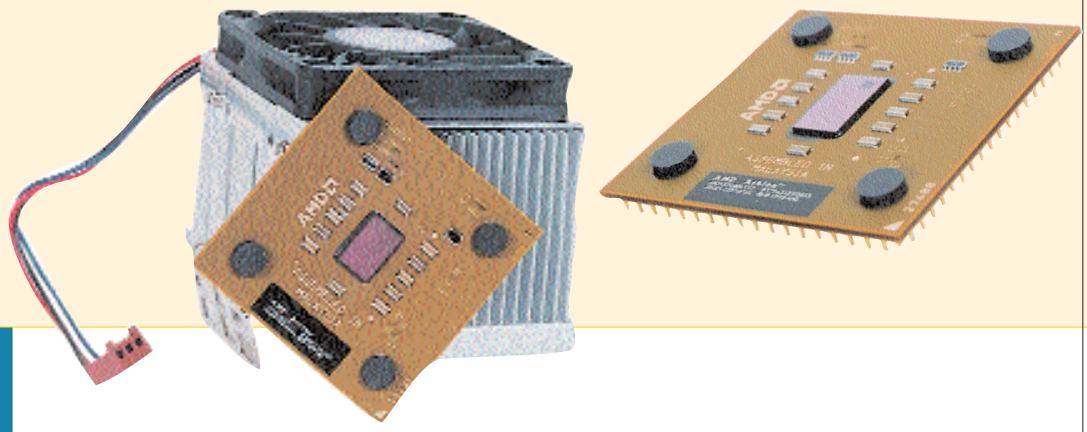
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TAKE a CRACK

THIS MONTH'S CHALLENGE

Safely Overclock Your CPU

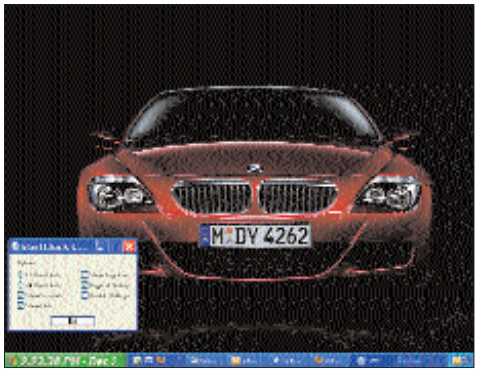
CPU overclocking has its advantages but it can also be risky business. Is there a safe way to overclock your CPU? Sounds simple? Let's see you give it a go. Send your solutions to takeacrack@thinkdigit.com

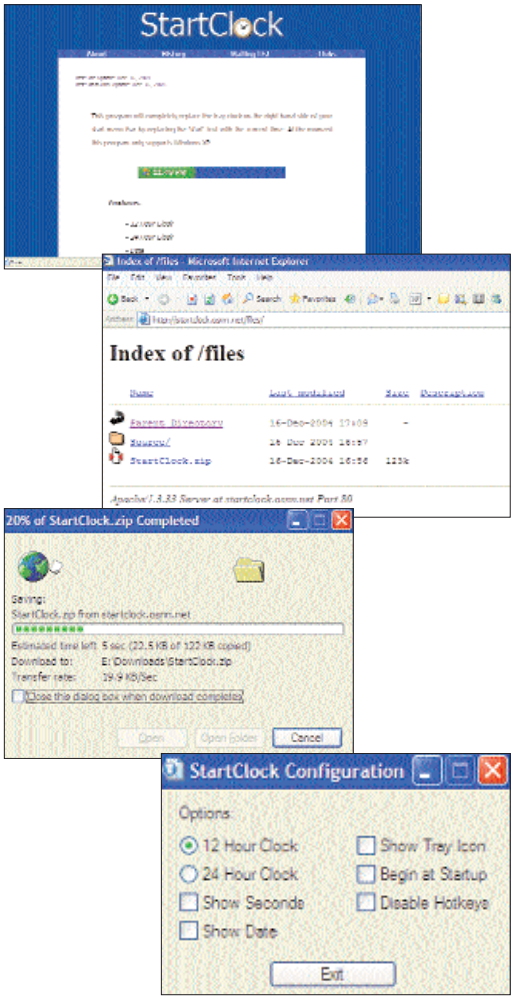


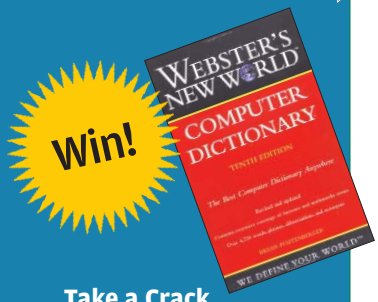
LAST MONTH'S CHALLENGE

Get the Start button in Windows XP to display the System Time

- Fire up your favourite browser and punch this URL in the address bar: http://startclock.osnn.net.
- Go to the "Click here to download" link and this will forward you to the download page: http://startclock.osnn.net/files/.
- Now download the startclock_installer.exe to your hard drive and install this cool freeware. This free tool—Startclock—replaces the word "Start" with the clock.
- This tiny piece of code comes with startclock.ini file for making configuration changes such as 12-hour clock with seconds, 24-hour clock, load program at startup, refresh rate (be careful while changing this setting; smaller the number, more the CPU usage) and hide tray icon. To exit this program, press "Ctrl+Alt+x". That's it, now you can save precious space on the taskbar by replacing the clock from the system tray.







Take a Crack and Win
Webster's New World Computer Dictionary
By Bryan Pfaffenberger
Published by Pearson Education

WINNER
Harsh Vardhan Gupta, Bareilly

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The Cyborg Times

January 1, 2020 * 4 Pages * Cyborg Stories of Yore

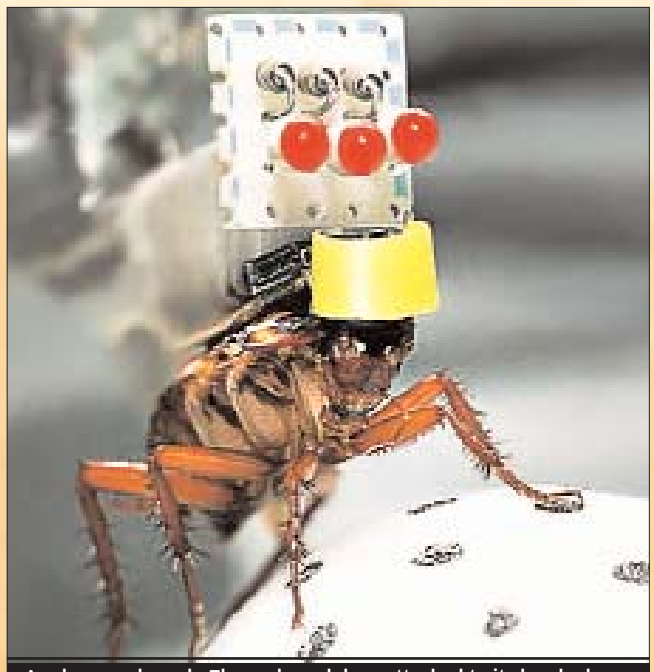
Defying Death

Mumbai: Which of the following is science fiction?
(a) A rat's brain flying a plane
(b) An android removing his biological eye
(c) A monkey controlling a robot using its thoughts

Though it is the least weird of the three, the answer is (b)—from the movie Terminator. Yes, it's finally come to pass—science fact is truly stranger than science fiction. We have all watched blockbusters such as Terminator, and are all familiar with the terms cyborg, cybernetics, android, etc. However, what is a cyborg? Dictionary.com's definition: "Cyborg: A human who has certain physiological processes aided or controlled by mechanical or electronic devices." So, in theory, a person with an artificial limb, or heart, or lung, or even a hearing aid, could be considered a cyborg.

However, this is not about nit-picking over definitions, it's about us, humans, and how technology is changing us; making us evolve into part-tech, part-tissue beings.

So how many people that you know are already on their way to becoming a cyborg? There are several out there already!



A cyborg cockroach. The cockroach has, attached to its head, electrodes that can be remote controlled

Life As A Cyborg!

It's 2050: are you still completely human? Read on to find out what you are missing in life...

Experience A Much Richer World: Wire up your brain to accept all kinds of input, beyond your current five senses. See the "colours" of an X-Ray, "smell" an infrared signal!

Control Yourself Via A Computer: Using brain implants, you can unite with a computer that stores all your experiences. You can then play them back when you wish, truly reliving each moment!

Have Infinite Knowledge: A global consortium of supercomputers awaits! Everyone's experiences and knowledge are stored inside this collective. Log in to absorb global knowledge on the subject of your choice. Relive other's experiences!

Mini-Me: Instead of a companion computer that resembles a metallic box, why not employ a clone instead!? With a computer instead of a brain in his skull—send him out on a mission, and experience the dangers of life through him.

Never Die: When a body part malfunctions or drops below a specific performance level, your trusty Mini-Me will remind you that you need to have a servicing done. Even if your brain starts dying, create a clone, upload all your brain data to the new brain, and live on through the new brain and body.

"I Want To Be A Cyborg"

"My being born a human, an accident," Kevin Warwick confesses

Reading, UK: Kevin Warwick, Professor in the Department of Cybernetics at the University of Reading, has proclaimed that his being born human was "an accident of fate," which he says, can be changed. In his "Project Cyborg," Warwick experimented with what measure of control could be achieved using implants—electronic chips married to his body, specifically, his arm.

His first implant, in 1998, allowed him to control doors and such by hand gestures or by walking in a certain direction; in 2002, an implant consisting of an array of 100 electrodes, with a neural interface allowed him to go beyond that.

The new implant sends signals back and forth between Warwick's nervous system and a computer. The idea is to "tap into his nerve fibres" and try a series of experiments. His first goal was to record and identify signals associated with motion.

When he twiddled his left index finger, a signal was sent, via the implant, to a computer where it was then recorded and stored. The next step was to transmit this signal back to the implant, in an attempt to generate an action in Warwick—trying to get his left index finger to twiddle.

Contd on next page...

...Continued From Page 1

Project Cyborg

Warwick's team would attempt this exercise with emotional signals as well. When he was happy, they would record the signal.

Then, when his mood changed the next day, they would play the happy signal back, to try and cheer him up. Similarly, the team wanted to see whether signals such as ultraviolet, ultrasound, and X-rays sent to the implant, would be capable of being processed by Warwick's brain.

The electrode-array experiment in 2002 was successful, and the signal produced was detailed enough for a robot arm to be able to mimic the actions of Warwick's arm! Also, using the neural interface, Warwick controlled an electric wheelchair and an intelligent artificial hand. The implant was able to measure nerve signals transmitted down Warwick's arm, and was also able to create artificial sensation.

Warwick's experiments and ideas are worth noting because he is not only a professor and researcher; he is also an actual cyborg, by virtue of his implants.

There has been no dearth of criticism about Warwick, though—for example, why didn't he do something more interesting with his first implant than control equipment?

Fact Stranger Than Fiction

Computers controlled by brains, brains controlled by computers... Would you like to have your brain wired for remote control?

Soon, say several experts, sci-fi will need to catch up with reality.

In 1997, researchers at the University of Tokyo attached some of the motor neurons of a cockroach to a microprocessor. Signals were sent to the neurons, through electrodes, and the cockroach was propelled involuntarily. The next step is to eliminate controls—wire up a human brain to the cockroach, and let the human control it by thought! So how long before humans can be wired up and controlled? More importantly, who will do the controlling?

Warwick once spoke of an experiment in which a team at Emory University in Atlanta implanted a transmitting device into the brain of a stroke patient.

After the motor neurons were linked to the silicon, the patient was able to move a cursor on a computer monitor just by thinking about it. If thought control of a cursor is possible, why not thought control of an implant in someone else's brain—effectively, the direct transmission of thought via implants? What about mind-reading?

In December 2004, four people were able to control a computer using their thoughts and an electrode-studded "thinking cap," US researchers reported. The experiment, reported in the proceedings of the National Academy of Sciences, required no surgery and no implants. During the experiments, the four volunteers faced a video screen wearing a cap that held 64 electrodes against the scalp to record their brain activity. The key, of course, was the algorithm that translated brain signals into an interpretation of what the users wanted the computer to do.

A normal by-product of such advances is paranoia, and understandably so. So your brain is directly connected to your PC, but what stops the commands from being sent from PC to brain? No system is perfect, and all of us computer users will testify to that. What if someone developed a virus that could seize control of your brain the next time you "interfaced" with your



computer? Paranoia is the leveller of the over-enthusiastic, and some believe that mass mind control already exists—visit http://www.rense.com/general17/imp.htm and http://www.parascope.com/articles/0197/mcveigh.htm, which are indicative.

Rat's Brain Flies Airplane

A brain in a dish! Seriously! Thomas DeMarse, a University of Florida (UF) scientist, grew a living "brain" that could fly a simulated plane. The "brain" was a collection of 25,000 living neurons taken from a rat's brain and cultured in a glass dish. DeMarse's experimental "brain" interacts with a flight simulator of an F-22 fighter jet through a desktop computer, and a specially designed plate called a multi-electrode array. DeMarse says, "Over the electrode grid in the dish, we put living cortical neurons from rats, which rapidly begin to reconnect themselves, forming a living neural network-a brain." The brain and the simulator establish a two-way connection, similar to how neurons receive and interpret signals from each other to control our bodies.

To control the simulated aircraft, the neurons first receive information from the computer about flight conditions—for example, whether the plane is flying level or if it is tilted. The neurons then analyse the data and respond by sending signals to the plane's controls. Those signals alter the flight path and new information is sent to the neurons, creating a feedback system. The "brain" slowly learns to fly the plane, through trial and error.

So is this just another neural network displaying learning behaviour? In a sense, yes. But the fact that it is living makes it a milestone. If a rat's brain cells can pilot a plane, what might a human brain in a dish be capable of?



The Artificial Heart

October 2004, federal regulators approved use of an artificial heart, marking the first time a mechanical device has been made widely available to replace a failing human organ. In contrast with early hopes of permanently replacing an ailing heart with a man-made pump, the new device substitutes for the bottom half of the heart and can be used only to sustain critically ill patients in the hospital, until they can get a heart transplant.

The CardioWest Total Artificial Heart offers hope to Americans who would otherwise die each year without it. "It's a milestone," said Robert Jarvik, whose Jarvik-7 heart caused a world buzz when it was implanted in Barney Clark in 1982.

Electronic Eel

Israel: Dr. Amir Karniel, an expert in electrical engineering from the Technion, and a researcher in the area of motor control, has participated in several fascinating experiments. In one of them, he and other researchers separated the brain stem of a lamprey—an eel-like fish—from its body, and kept it alive in a container filled with oxygenated salt water, with electrodes attached to its side.

They connected a standard robot with wheels and light sensors to this floating brain. The robot was surrounded by a ring of light bulbs, controlled by the researchers. When a light bulb was flashed, the robot would send a signal to the floating brain, informing it of a flashing light.

The brain was able to understand this data, and send back a signal, commanding the robot to move, correctly, towards the light.

Now we know that disembodied brains can indeed command robotic appliances to act on their behalf. Perhaps the people who have spent millions on cryogenics (freezing human brains, with the hope of living again someday) will have the last laugh after all.

But living forever, as utopian as it may sound, is not the be-all and end-all of such research.

Wire Your Brain To The Net

Rodney Brooks, a leading roboticist and Professor of Computer Science at MIT, has said, "Direct neural control of complex machines is a long-term US military goal. DARPA has a brain-machine interface program aimed at creating next-generation wireless interfaces between neural systems and, initially, prosthetics and other biomedical devices." Brooks, who is also Director of the MIT AI Lab, goes on to say that the brain-Internet interface is not as far off as we think. Imagine that - broadband to your brain! (Visit http://wireless.newsfactor.com/perl/story/22841.html to see the full article.)

For a roundup of some exciting brain implant research, head to http://www.geocities.com/skews_me/implants.html.

Timeline

500 BC: Earliest known written reference to an artificial limb
300 BC: Capri, Italy: in 1858, a copper and wood leg dating from 300 BC unearthed
1863: Improvements to the attachment of artificial limbs
1898: Dr Vanghetti invents an artificial limb that moves through muscle contraction
1946: Major advancement in the attachment of lower limbs
1954: The first kidney transplant in Boston by Joseph Murray; also the first successful human organ transplant
1962: First breast Implants
1963: First liver transplant: the patient dies within a few days
1966: First pancreas transplant: immediately after the transplant, patient's blood sugar level begins to fall
1967: First Successful Liver Transplant. The liver functions for 13 months
1978: Rod Saunders implanted with the first research multi-channel cochlear implant
1982: Graham Carrick implanted with the first commercially-available 22-channel Nucleus cochlear implant
1982: Dr Barney Clark implanted with the Jarvik-7, an artificial heart intended to last a lifetime. Patient survives 112 days
1988: First successful liver-bowel Transplant: a liver and six metres of intestine transplanted
1989: First combination heart, liver and kidney Transplant: Surgeons transplant a heart, liver, and kidney into a 26-year-old woman.
2000: "Smart" legs - entire smart lower limbs, with digital control systems - expected to be on the market in two years
2000: "Jerry," blind after a blow to his head 36 years prior, regains his ability to see thanks to an artificial eye. Jerry sees a simple display of dots that outline an object
2001: First completely self-contained artificial heart transplant
2003: The world's first brain prosthesis—an artificial hippocampus—is tested. Unlike devices such as cochlear implants, which merely simulate brain activity, this chip implant performs the same processes as the damaged part of the brain it is replacing

There Is A New World Order

With implants recording our experiences, and with the ability to play them back, will all experiences boil down to the right kind of implant?

Will we have any use for a "regular" life at all? Will we, as cyborgs, lie asleep, Matrix-style, experiencing the world via our implants? If thought control becomes possible, who will control whose thoughts? Who will be the ultimate controller, preventing us from bringing back slavery? If we can read each other's thoughts, we will not be able to lie-is that good or bad? Will the exorbitant prices of such implants mean that the rich will live forever and the poor will continue to die, relatively, young? Will there be exorbitantly-priced implants that offer control over other, lesser-priced variants?

These are profound questions, and they will become more and more important. A simple example: the Total Artificial Heart (*see box "Artificial Heart"*) costs $100,000 (Rs 44,61,000). Who gets to be in the queue?

The facts are simple: the technology exists; it will be improved. Immortality is just a few years or decades, and a few thousand successful experiments away—providing you can afford it!

What It Boils Down To...

So what does all this research amount to? What do Warwick's experiments, DeMarse's rat brain-controlled flight simulator, Karniel's lamprey controlled robot and the remote controlled cockroach have in common?

Apart from scientific curiosity, it is evolution. Human evolution has hit a plateau; we have reached the limit of interaction with the universe-you cannot move a cup just by thinking about it. Telekinesis may be beyond our reach, but biological cybernetics isn't. It is biological cybernetics that allows Warwick's computer to respond when he enters the room, or lets a disembodied brain, or parts of a brain, control a robot or a flight simulator.

As our brains develop, our bodies and the universe around us become bottlenecks. Soon we won't have to control hand muscles, and reach out for a mouse, move it to a Web link on our screen, and then control our finger muscles to click on it-instead, we will only "think it"! No longer will your life be dependant on how long your tissues and organs hold out; instead, you will get a brand new android body for your brain-your only concern will be visiting the "service centre" and "changing your oil"!

Ultimately, it boils down to controlling your own mortality, and achieving superhuman feats. We all want to live forever! ■

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... The PalmOne Treo 600

January 2005

Ahmed Shaikh

My disdain for cell phones is legendary. I am probably the only person in the office who does not own one. I can live with the annoyance of ringtones and ignore the fact that a cell ensures you are always available, at your inconvenience! While these are easily surmountable hurdles, what has left me cold is their abysmal design, uninspired usability and pathetic services (wherein you are either deleting spam SMSes or struggling to be heard over a bad connection). But there have been temptations: the Treo 600 has more than once lured me to the Dark Side—"see my QWERTY thumbboard, check out my Palm OS, ogle at my SDIO slot... join me and we shall erase the memory of the T9 dictionary..."

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Day 1

Stardate: Unknown. The PalmOne Treo 600 makes an appearance at the office, the news reaches me eventually and I make my stand—hand it over or suffer the consequences.

Night 1

I own a Palm Zire 71; I have tried numerous Pocket PC devices, and let me tell you that they do not hold a candle to the Palm OS in terms of usability. A Pocket PC has its positives but ease of use isn't one of them.

For the moment, I activated MMS and GPRS on my brother's SIM and called it a night.

Day 2

The phone is a lot smaller than images do it justice, and is very easy to hold and operate. Though it's made of plastic, the Treo feels solid, but my gut tells me the silver paint will peel off with use and sweat. The layout of the QWERTY board is cramped, but its domed keys are easy to hit; after initial fumbles, I typed a small newspaper story to within a memo. An SMS spree is called for!

Day 4

Had to take the phone to an Orange outlet to activate GPRS, something about it being too advanced for an over-the-air activation... hmm...

Day 6

This isn't a PDA. Its low-resolution screen rejected most of my favourite games, neither was it suited for a bit of reading. Its backlight frequently switches off to save battery, and the LCD is not as sharp or clear as the one on my Zire 71. Low in-built memory will certainly force an SD card investment. This is no PDA.

Day 7

A friend called me, asking me to stop spamming her with SMSes of newspaper clips and stupid emoticons... whatever did she mean?

Day 9

This is a superb phone! Before heading into a meeting, I can throw a switch on the Treo to take it into silent mode, no more hassles with "profiles." The external antenna allows for surprisingly good conversations even when signal strength is low; the speakerphone is easy to use and very clear. The QWERTY pad is heaven-sent for jotting down notes or sending off e-mails on-the-go. SMSes are automatically saved as conversation threads much like in an instant messenger, complete with emoticons.

Day 17

A demonstration: I started the Treo's Web browser, copied text from a site, and launched the e-mail client, which, in turn, auto-filled the name and number of my contact, typed in the subject line, pasted the copied text into the body of the e-mail, inserted some emoticons, attached a picture taken via the Treo's camera and sent off the e-mail—all this, using one hand and without employing the stylus!

Day 30

Soon we shall depart! You have been a pleasure, 600, but I am not a cell phone owner yet. The Treo 650 was just announced: with Bluetooth, a replaceable battery, a 320 x 320 hi-res LCD, better camera... it calls to me...

Imaging Atul Deshmukh

Wide Angle



Sumod Hajela

Share It, Please

Gadgets becoming smaller and more powerful could prove to an IPR nightmare unless the distribution format changes

An interesting arrest was made in Mumbai a few weeks ago. A computer shop owner was arrested on charges of piracy. Yes, that is quite commonplace but do bear with me for a minute. The Intellectual Property (IP) being pirated was a copy of a recent mainstream movie featuring a certain "hot" actress. The real interesting part about this incident, is that the movie was in a compressed video format that 1) was not one that the owners of the IP would ever use, 2) could be exchanged freely, 3) would fit on a memory card and 4) was meant to be viewed on a Nokia 6600. That's right! A full movie on a little phone, being traded on the dark side.

Admit it, you too have been guilty of doing the funny deed at some point. How often have you restrained your impulse to pass the merriment of a funny SMS to your friends? With cheap GPRS connectivity and GPRS capable phones cheaper by the day, how long before the SMS turns into e-mail with video attachments? Feature-packed phones have already shown the lowly PDA its place, and are currently busy kicking consumer grade cameras out of the market. With 5GB storage available on tiny 1-inch hard disk drives, digital media recording and playback is the next frontier. What do you think will happen when it is just as easy to receive and forward a video clip, or a song or whatever? With the majority of current phones, you can exchange ringtones and wallpapers. You could potentially forward applications and games the same way, but basic forward-locks prevent you from doing so. Yet, you see mobile games being pirated all the time.

For cheap content, the media guys can live with simplistic protection schemes. But when high value content (read movies and music) come into the picture, stiffer protection is demanded. This protection is currently available in the form of OMA DRM baked into the new crop of phones such as the Nokia 3220 (so, get together, but don't really do whatever).

The basic premise for any digital content transaction is that both the consumer and the content provider have a set of needs that must be met. The content provider wants to be able to charge for the content, and control its use. The consumer on the other hand, must be able to access that content any way he wants, and transfer it around to any of his devices that are capable of displaying it, be they portable entertainment devices or a PC or the TV. To be successful, DRM solutions have work within that space. Of course, an unbreakable DRM has not yet been implemented and theft at source pulls content into the darknet before it has a chance to be DRM-wrapped.

To a practical media company, sharing isn't bad as long as they get paid for their content. EMI intends to use our compulsive sharing drive to run what is being termed a "super-distribution" network in Europe, early next year. Super-distribution is a 'viral' network (in marketingspeak) that functions on the same general principle as shareware. You can pass on a copy of your favourite tune to your friends. They can preview the song as many times as they want, but after a fixed time period, they must purchase the song or it is automatically deleted. While EMI is the first major music distributor to run this experiment, you can go right now to http://weedshare.com to decide for yourself whether you find this transaction model interesting.

Either way, the cell phone is your next radio/TV/mediaplayer/gameboy/PDA/camera. Mobility will allow it to eventually be used for purposes beyond those of any deskbound PC. If access to content must be controlled, the battle for the hearts and minds of consumers will have to be won on the cell phone. Tearing down the wall around sharing content, allowing users to behave as they naturally would, and charging for the convenience of enabling that may be the only viable route for content providers to make money simply because even when they don't make money, friendly neighbourhood file-sharers continue to make hay.

Search Redux

On a more practical note, two recently released free applications have shot to the top of my list at work. Firefox has been my default browser over its last few point releases, and the final version 1.0 just cements that position. Interestingly, it is my choice not because of what comes bundled in the installer, but because of what you can install later—a most useful set of extensions. Another tool, Google Desktop Search (GDS) almost made me drop Firefox. The unique thing about GDS is its ability to index documents as you access them, even web pages, but only if you use Internet Explorer (IE). The ability to search through my browser history is an invaluable research tool, so IE was back on my list. Then came the discovery of Slogger, an extension for Firefox that saves every page you view in the browser to a specified folder (it can also save as selectively as you want). When the page is written to disk, GDS indexes it immediately and voila—problem solved. There are alternatives to GDS that handle more file-types (by the way, look up GDS Plus at http://www.trivex.net/) but GDS does the ones I use with a super simple browser interface, so it stays. ■

Sumod Hajela, Associate Editor (Technology) is Digit's Alpha Geek. His pastimes include creating new software during lunch hours, and mastering just about every computer-related technology that there is. Write to him at sumod_hajela@thinkdigit.com



Imaging Jayan Narayanan, Atul Deshmukh

The pace at which the digital revolution is taking place, it will not be long before smart houses are a reality... with the *Digit* Zero1 2004 awards, we salute the companies—and their products—that help make this revolution come about

The Digit Test Centre

Another wonderful year has passed by, leaving behind sweet memories of the technologies that emerged across a broad spectrum. While some flickered for moments before going out, others stayed put, and yet others evolved into different incarnations altogether.

This year has seen some dramatic shifts in the way technology is perceived, and the way it will be perceived in the near future. The industry giants are gunning for their ultimate goal—the introduction of the PC into our living rooms. So whether it is the new 915 chipset from Intel, or Microsoft's Media Center OS, the final fantasy is pervasive computing that should *Enable* and *Entertain* you right from the word Go.

Every facet of computing has undergone radical changes in the year that has passed. On the desktop end, Intel took the lead with the introduction of their new desktop platforms—the i915 and the i925 supporting the PCI-Express standard, a technology that will determine the future of motherboards and graphic cards, and in turn the fate of desktop computing. While Intel was successful, arch rival AMD stole some of the limelight with the introduction of truly awesome 64-bit processors that have made the enthusiast community sit up and take notice.

Mobile technology got a shot in the arm with the release of Intel's new Dothan processor. This power-optimised processor performs as well as do high end Pentium 4 processors, but consumes much less power, resulting in low heat dissipation—which in turn means lesser cooling requirements.

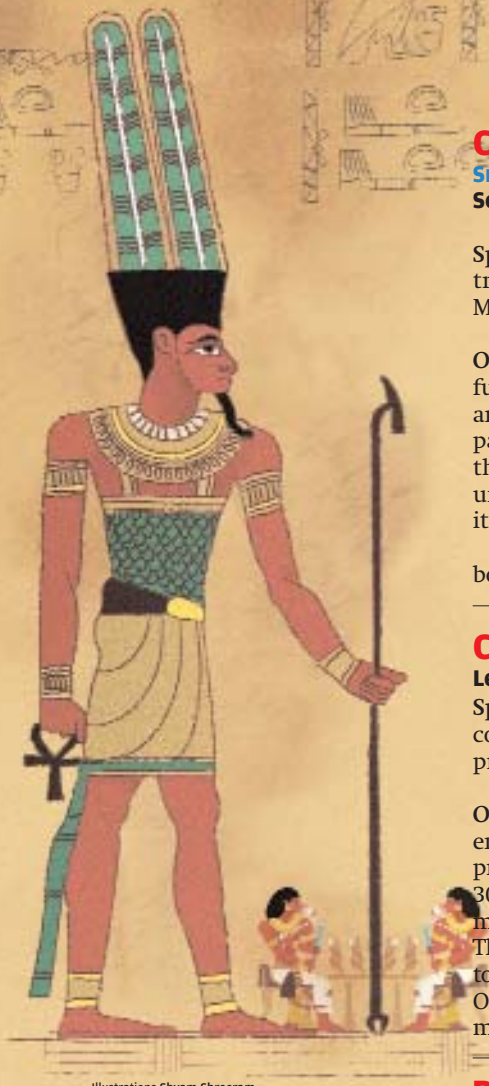
Mobile computing is hot, and is manifesting itself in varied forms across all age groups. MP3 players such as the Apple iPod are all the rage amongst young people, and smartphones such as the Sony Ericsson P910 are digital heaven for mobile executives. These smart devices, combined with the proper telecommunication packages, shrink your world to the size of a table-top globe.

Industry bigwigs such as Intel, HP, nVidia, etc. are embracing open source, and are committed to providing drivers for their product lines. This might mean a mighty impact on the adoption of Linux in the SoHo and enterprise segments. Linux distributions are concentrating more on making their products user friendly, and to a certain extent, have succeeded. With KDE 3.3 and Gnome 2.6, the building blocks of the Linux GUI have improved to a level where they can match up to the Windows GUI.

From an Indian perspective, things are shaping up really well. As of today, you can assemble a reasonably good PC for around Rs 20,000. Such affordability is sure to boost PC penetration, and will soon put another million Indians into cyberspace.

Take a look, in the following pages, at the *crème de la crème* of products that have stood out in their respective categories in the year 2004.

Dear Reader,
A technical glitch resulted in some pages of the 'ZERO1 AWARDS' not getting published in the December 2004 issue. Instead of publishing only the left-out pages, and thus creating a problem of reference, we have published all the pages this time around. We regret any inconvenience this may have caused.
– Editor



Illustrations Shyam Shreeram

Cell Phones

Smartphones

Sony-Ericsson K700i



Specs: 65K colour screen, 41 MB built-in, tri-band, VGA Camera, Bluetooth and MP3 audio

Our Verdict: The K700i comes in a beautifully crafted body accentuated by the anodised silver finish. The translucent keypad, though cramped, gels perfectly with the body. The K700i from Sony-Ericsson is unarguably the most feature-rich phone in its category; name the feature and it's got it.

With features cramped into its small body, the K700i wins over its closest competitors on the features it offers. The K700i comes with a brilliant 65K colour screen. The menu interface is sleek, and the browsing action is crisp without significant lag or jerks. The inbuilt camera is good for casual shots, and returns above-par picture quality. The MP3 player, though lacking in fidelity, comes in handy when on the move. Bluetooth makes transferring files and syncing your data a piece of cake.

Runner-up: **Nokia 6600**

Colour Laser Printers

Lexmark C510



Specs: 30 PPM mono printouts, 8 PPM colour printouts, 2400 dpi image, 500 Hz processor and 64 MB buffer memory.

Our Verdict: The C510 from Lexmark is an entry-level colour laser targeted at the price conscious, small workgroup. Boasting 30 mono and eight colour printouts per minute, the C510 lives up to expectations. The optional Ethernet adapter allows you to connect the printer to your network. Other good features are the 64 MB buffer memory (upgradeable to 320 MB for heavy duty use), a 250 sheet paper cassette, an optional duplexing unit and more! The C510 from Lexmark printed 24 mono pages, which is pretty close to the rated 30 PPM; colour printing was not up to the mark, though. The quality of printing was also much better than the competition.

Runner-up:
Samsung CLP-500

Digital Cameras

Under 30,000 rupees

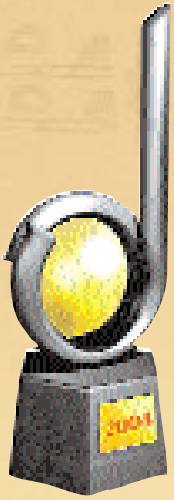
Kodak Dx-6490



Specs: 4 Megapixels, 10X optical zoom, 38-380 focal length, 1/1700—16 shutter speed and 16 MB memory

Our Verdict: The Kodak DX-6490 sports a pseudo-SLR look. The potential highlight of this camera is the 10X optical zoom engine that can zero in on to distant objects. The camera also has a small EVF (Electronic View Finder) which, when used, boosts the battery life to certain extent. The quality of the output is crisp, vibrant and life-like. For the price it is offered at, the DX-6490 is a great buy.
It features in this list for its picture quality, features offered and for its excellent ergonomics.

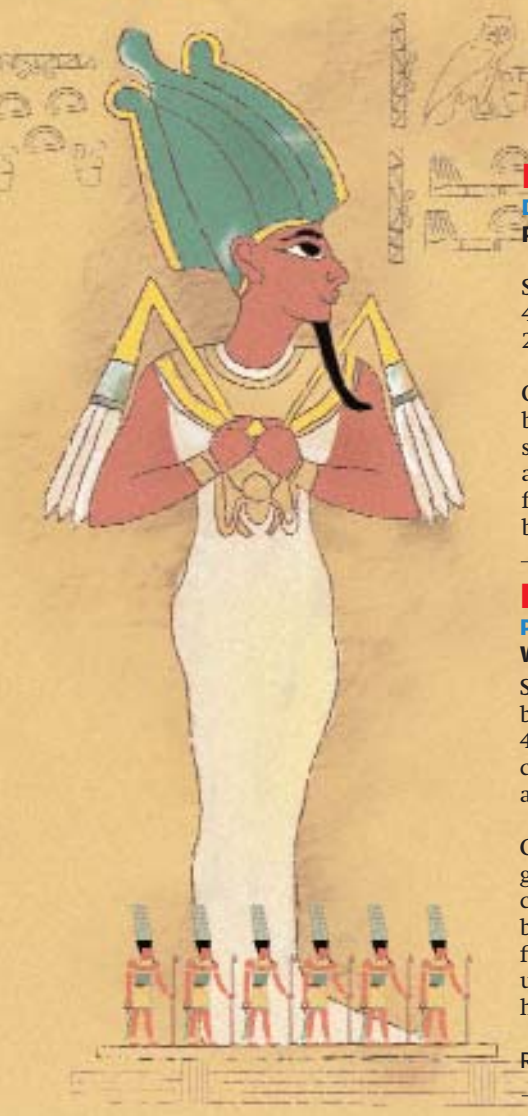
Runner-up:
Sony Cybershot P100



Flashback To December 2000

ClickiT DCE-400 Digital Camera
Specs: 1,024x768, 4 MB CF card, USB, 4 AA batteries
Evolution: In 2000, digital photography was just taking its roots in India, and the ClickiT DCE-400 is a perfect example. The ClickiT DCE-400 was priced at Rs 20,000, and all it could do was take images at 1024x768 or 640x480, and could probably take it at 1.5 megapixels. In four years, digital photography has come a long way and cameras much better than the ClickiT DCE-400 cost no more than Rs 10,000.
Today, for Rs 20,000, you can expect a camera with a 4-megapixel CCD, 3x optical zoom, 4x digital zoom and other advanced features including white-balance, etc.

Pioneer DVD-104SZ
Specs: CD read 40x, DVD read 10x
Evolution: In 2000, DVD-ROM drives were the happening things: fast-forward to 2004, and we see DVD writers as the next big wave. Today, the Pioneer DVR-108 not only allows reading DVD disks but also burning 4.3 GB of data onto a single disk. With dual-layer DVD drives making it to the market, you can soon write double that amount onto a single DVD.



DVD Writers

Dual Layer DVD Writer

Pioneer DVR-108



Spec: 16X DVD+R, 16X DVD-R, 4X DVD+RW, 4X DVD-RW, 2.4X DVD+R DL, 32X CD-R and 24X CD-RW

Our Verdict: The Pioneer DVR-108 was the best Dual layer DVD writer that we have seen this year. The drive is feature-packed and outplays most others except the one from Asus. The DVR-108 supports over-burning and can hence write DVDs above the supported speed. On the performance front, it burns a Dual layer DVD in under 27 minutes; faster than most writers. Reasonably priced, the Pioneer DVR-108 is the best DVD writer that money can buy.

Runner up
Asus DRW-1604P

External Hard Drives

Portable Hard Drives

Western Digital Media Centre 250 GB



Specs: 7200 RPM, 8 MB buffer, average latency 4.2ms, 8-in-1 memory card reader, Firewire and USB 2.0 interface

Our Verdict: The integrated 8-in-1 memory card reader, 8 MB buffer and the dual interface makes the Media Centre a unique product in its own right. This is the best external hard drive that you can bet your money on.

Runner-up: **Maxtor One Touch 250GB**

Compact Hard Drives

Freecom FDH-2 PRO 80 GB

Specs: 1.8-inch platter, 175 gms, 2 MB buffer and USB 2.0 interface
Our Verdict: With the lowest per-MB price, one-touch button for backup, excellent looks and stable performance, it took our 'Best Buy' Gold award in this category of hard drives.



Runner-up:

Transcend StoreJet TS0GSJ25

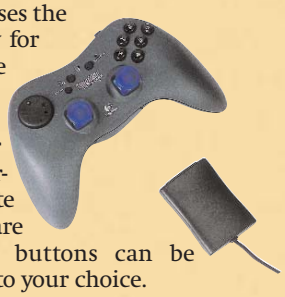
Gaming Devices

Game Pads

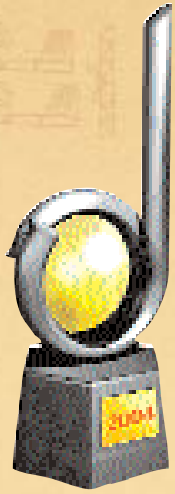
Logitech Cordless RumblePad

Specs: Cordless, rumble effects, D-pad, 11 programmable buttons, two analogue controller sticks and a slider throttle.

Our Verdict: This is, by far, the definitive game pad. If "only the best" is your *mantra,* look nor further than Logitech's Cordless Rumble Pad. This game pad combines the best of all worlds, and packs in features that justify its high price. The analogue sticks are sensitive and offer right amount of feedback to the smallest nudge. The perfectly laid out buttons offer long hours of stress free play. Since the pad uses the 2.4 GHz radio frequency for cordless operation, the controller can be used from as far as 20 feet away. The controller requires four AA batteries, which makes it quite heavy. The driver software is simple to use and buttons can be programmed according to your choice.



Runner-up: **Logitech Precision USB**



Flashback To December 2000

Iomega 2 GB Jaz
Specs: SCSI Drive
Evolution: Four years ago, the 2 GB Jaz drive was the "in" thing. Today, an 80 GB ultra-compact hard drive is it. **Comparing sizes:** you can make out the obvious difference—the ultra-compact drive is much smaller than the Jaz drive. The 2 GB Jaz was priced at Rs 21,000 back then, so is the Freecom FDH-2 PRO 80 GB. Effectively, the price per MB has dropped 40 times.

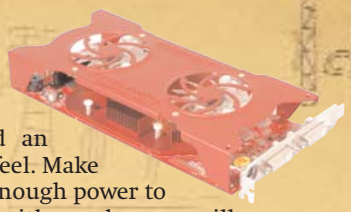
Gaming Device
Evolution: Over the four years since 2000, the basic technology powering gaming devices hasn't seen many advances, except for some striking designs and low price tags. Game pads were considered to be quite versatile and they are still preferred for the different types of inputs they provide, such as analogue sticks and D-pad. Initial game pads were simple devices, but today, they pack in some real stuff such as rumble effects, cordless operation, programmable keys etc.

Graphics Cards

High-end

Gainward GeForce 6800 GT 256MB Golden Sample

Specs: 16 Pixel Pipelines, Shader Model 3.0 support, Core Clock - 350MHz, Memory Clock - 500MHz, Fill Rate - 5600 million texels per second, Memory Bandwidth - 32GB/s.



Our Verdict: The latest Golden Sample monster from Gainward is only second to the 6800 Ultra. In our tests, nothing could match it in terms of performance. Any game that we threw at it was mercilessly slaughtered. The mammoth heat sink with dual fans only gives this card an alien look-and-feel. Make sure you have enough power to feed this card with or else you will suffer from a dead power supply malaise. If you want to own any game right now, this card is the silver bullet you have been waiting for. Bite it!

Runner-up:
Powercolour X800

Hard Drives

120 GB Hard Drives

Maxtor DiamondMax Plus 9 120 GB

Specs: 120 GB, SATA 150, 7200 RPM, Data Buffer 8MB



Our Verdict: The DiamondMax Plus 9 120 GB tops our chart for 120 GB disk capacity internal hard drives. The 120 GB DiamondMax Plus 9 returns an impressive drive index score of 39,405 in Si Soft Sandra. Sequential writing and reading speeds are impressive and the drive logged 59/57 MB per second respectively on these parameters. The drive took around 51 seconds to copy 1 GB data from one partition to the other, which is reasonably okay.

Runner-up:
Samsung Sp1213C

Input devices

Desktop Combo

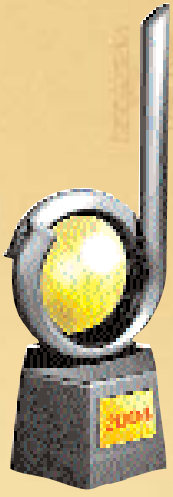
Microsoft Wireless Optical Desktop Comfort Edition

Specs: Wireless Keyboard and mouse, PS/2 and USB compatible, Zoom function and Ergonomic Keyboard Design.



Our Verdict: The new line of input devices from Microsoft marries two important aspects—ergonomics and convenience. The Wireless Optical Desktop Comfort Edition consists of an ergonomically designed wireless keyboard and an optical wireless mouse. The ergonomic keyboard takes a new approach in design—the keys are placed on a curved slanting ridge and are comfortable to use. One feature that sets this keyboard apart is the presence of a zoom slider that allows zooming of supported documents. The ambidextrous optical mouse has a tilt function that is handy if you use applications such as Excel. It requires two AA batteries, but can run on one as well. Overall, this desktop combo offers the best you can expect of an input device for general usage.

Runner-up:
Logitech LX-700



Flashback To December 2000

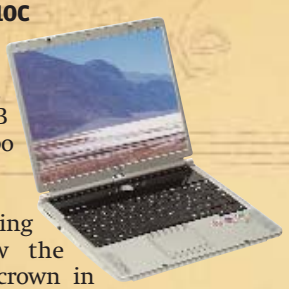
IBM Deskstar 72GXP DTLA-307075
Specs: : 80 GB, ATA 66, 7200 RPM, Data buffer of 2MB.
Evolution: Almost every PC component that has evolved over the last four years has seen tremendous boost in performance. But, despite development in technologies powering a hard drive the real-world boost in performance is not as expected after four years. Although current drives are more robust and reliable, they remain the slowest performing component in your desktop. Prices have also dropped substantially and a 250 GB drive is now within reach for most.

Microsoft Intellimouse Eye And Acer Airkey
Evolution: There was a time when input devices were neglected by manufacturers and users. Over time, emphasis is being laid on ergonomics and convenience. Back then, Microsoft's Intellimouse Eye was the first mouse with Optical technology, which guarantees comfort and convenience of use.
The Acer Airkey was based on IR technology for wireless operation but Bluetooth and RF devices are no longer hampered by the line-of-sight syndrome.



Laptops

Workhorse
MSI MegaBook M510C



Specs: Pentium M 1.5 GHz, 256 MB, 15" screen, 40 GB hard drive, combo drive

Our Verdict: Blazing performance saw the M510C take the crown in the workhorse category. The Megabook M510C also offers a good configuration for the price.

Runner-up: **Wipro CP**

Lifestyle **LG LM-50**

Specs: Pentium-M 1.5 GHz, 256 MB, 15" screen, 60 GB hard drive, combo drive

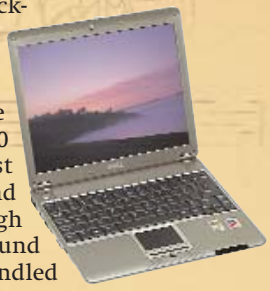


Our Verdict: The LM-50 will appeal with its good looks. An excellent performer in its category, it posted good scores in our tests. Features are limited, but one won't find any essential features missing.

Runner-up: **Compaq X1237AP** and **Toshiba Satellite M30**

Ultra-portable **Dell Latitude X300**

Specs: Pentium M 1.2 GHz, 384 MB, 12" screen, 30 GB hard disk, external USB combo drive, docking station and an extra battery

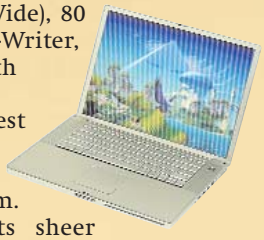


Our Verdict: The Dell Latitude X300 has the slimmest profile of all, and is compact enough to be carried around easily. It comes bundled with all the necessary bells and whistles and has an assortment of accessories to choose from.

Runner-up: **Fujitsu Lifebook S2020**

Apple **G4 PowerBook 17 inch**

Specs: Power PC G4 1.5 GHz, 512 MB, 17" screen (Wide), 80 GB hard disk, DVD-Writer, FireWire 800, Bluetooth



Our Verdict: The best designed notebooks in the business, they have their own charm. We praise it for its sheer beauty, not to forget the performance.

Memory Modules

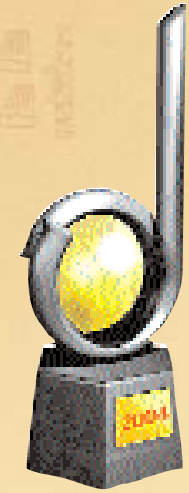
Corsair CMX 3200 LLPT DDR 400 MHz



Specs: 32M x 8 DDR SDRAMs, single bank, Ultra-low latency (2-3-2-6) and SPD programmed for low latency operation.

Our Verdict: When it comes to the best memory modules, enthusiasts and gamers swear by Corsair for the performance and overclocking capabilities on offer. While Corsair has a series of products, their CMX 3200 LLPT modules offer the ultimate in performance. These modules are, by default, rated for ultra-low (2-3-2-6) latency operation work. They have no compatibility issues with most chipsets such as Intel, VIA, SiS, nVidia and ATi, and thus, they work seamlessly with most motherboards. We recommend these memory modules to geeks who like to overclock, and for gamers who want the best.

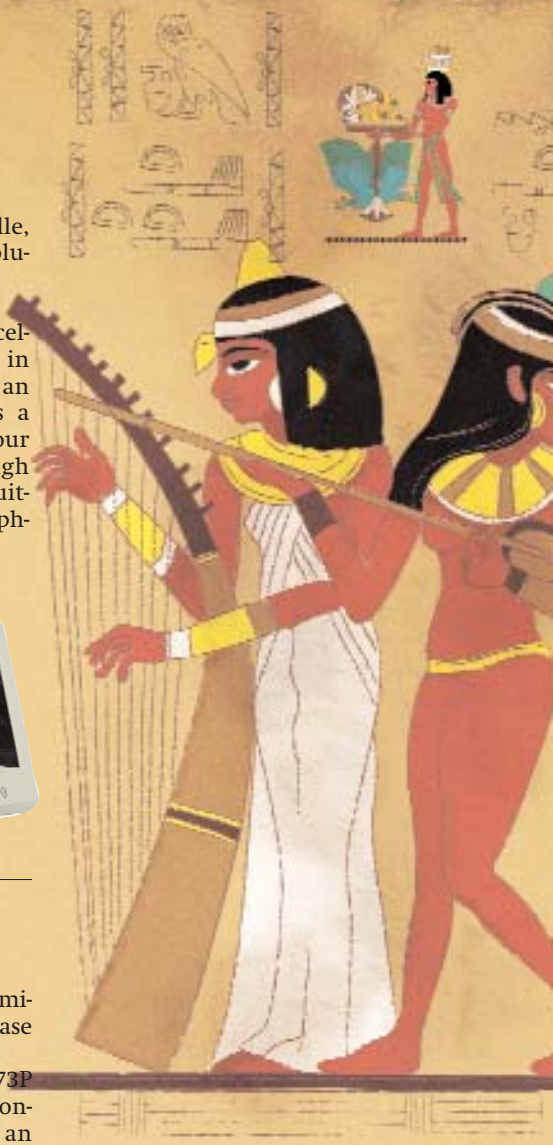
Runner-up: **NA**



Flashback To December 2000

Zenith 21A
Specs: 1 GHz Pentium 3 processor, 128 MB RAM, 10 GB hard disk, S3-based graphics and CD-ROM
Evolution: Laptops have metamorphosed from the old Pentium III chips to optimised fast Pentium M processors, extremely good graphics and four hours of juice. The Zenith 21A then was priced Rs 1 lakh; today you can buy a powerhouse laptop for that price.

RAM
Evolution: In year 2000, it started with the EDO-RAM modules that were a part of the early Pentium and Pentium Pro series. EDO-RAM was gradually displaced by a better performing SD-RAM with the introduction of Pentium II and Celeron processors. The working frequency of SD-RAM varied from PC66 to PC133. AMD introduced the DDR feature to SD-RAM modules, these new memories were capable of transferring data at twice the rate of normal SD-RAM. DDR SD-RAM frequency varies from PC266 to PC3200. Though higher frequency modules are available, they are not certified by the governing authority. In year 2004, DDR II standard was introduced, which clocked to run at 533 MHz and above.



Monitors

17-inch CRT Monitors

BenQ V773

Specs: 0.27 mm dot pitch, 16-inch viewable area, maximum resolution of 1280x1024 @ 60 Hz, 110 MHz bandwidth.

Our Verdict: Priced affordably, the BenQ V773 is a good buy. The maximum resolution of 1280x1024 @ 60 Hz, viewable area of 16" and the dot pitch of 0.27 is reasonable at best. Geometrical distortions are negligible and brightness and contrast is perfect—with no need to boost the gamma when playing dark games.

Runner-up:
Philips 107ES



19-inch CRT Monitors

Philips 109P4

Specs: 0.25 mm dot pitch, Aperture Grille, 1920x1440 @ 60 Hz, maximum resolution, 261 MHz video bandwidth.

Our Verdict: The Philips 109P4 is an excellent 19-inch monitor you can invest in without hesitation. The 109P4 uses an Aperture Grille tube that guarantees a crisp and bright display. Excellent colour saturation, good contrast and high brightness make the Philips 109P4 suitable for most 3D applications and graphics requirements. In the geometry test, the 109P4 performed extremely well, and we recommend it for designers who yearn precision.

Runner-up:
Philips 109ES



Monitors (LCD)

15-inch LCD Monitors

CMV-CT522A

Specs: 500:1 contrast ratio, 250 cd/m^2 luminance, 16ms response time and in-built speakers

Our Verdict: Excellent colour reproduction, reasonable brightness, superb contrast ratio and a good set of features make the CMV-CT522A a perfect 15-inch LCD monitor to invest in.

Runner-up:
CMV-CT522A



17-inch LCD Monitors

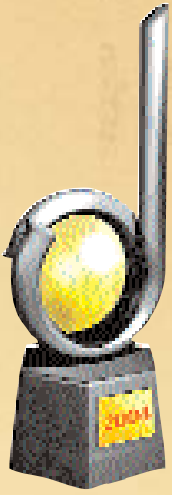
Samsung SyncMaster 173P

Specs: 700:1 contrast ratio, 270 cd/m^2 luminance, 25ms response time and swivel base

Our Verdict: Samsung's SyncMaster 173P comes out as the best-designed LCD monitor. The 700:1 contrast ratio gives it an edge over other LCDs. However, the 25ms response time makes it unsuitable for gaming. Performance on all other aspects is top-notch.

Runner-up:
CMV-CT722A





Flashback To December 2000

ViewSonic PS775

Specs: : 0.22 mm dot pitch, 16-inch viewable area, 1600x1200 @ 76 Hz and 150 MHz bandwidth.

Evolution: ViewSonic's PS775 was way ahead of the competition in its time. Acceptance of 17-inch monitors over the four years has increased and this mass adoption has lowered prices. However, price cuts simply mean curtalling of high-end specifications. Therefore, as of today, one can buy three 17-inch monitors for the price of a ViewSonic PS775 in its heyday. Also, new technologies such as full-flat tubes have percolated into mass market products.

LCD Monitors

Evolution: Back in 2000, LCD panels were simply too expensive for the masses. The manufacturing costs of LCD panels were very high. With rapid development of better fabrication techologies, manufacturing costs were brought down. As of today, you can get a 14-inch LCD panel for as less as Rs 13,000, which is terrific considering the fact that the same panel was priced at Rs 40,000-plus four years ago.



Motherboards

Intel Motherboards

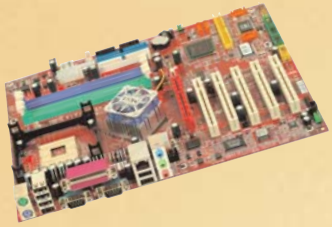
MSI 875P Neo FISR

Specs: i875 Chipset, supports DDR 400 MHz, AGP 8X, 2 SATA ports, 7.1 channel sound, 8 USB ports, Gigabit Ethernet and FireWire ports.

Our verdict: The 875P Neo FISR from MSI is still the best board money can buy, when it comes to the older socket 478 Pentium 4 processors running at 800 MHz FSB.

The 875P Neo board comes with MSI's Core cell chip that allows on-the-fly overclocking, power saving and real-time diagnosis of critical system parameters such as temperature and fan speed. The board is packed to the gills with features, and delivers excellent performance.

Runner-up:
Intel D875PBZ



AMD Motherboards

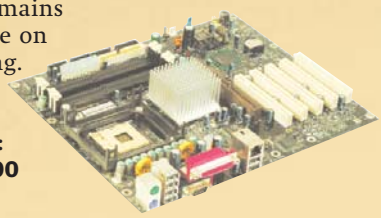
Asus A7N8X-E Deluxe

Specs: nVidia Nforce2 Chipset, twin Gigabit Ethernet, 802.11b Wi-Fi card, SoundStorm Audio, SATA ports, 6 USB ports and FireWire port.

Our verdict: The Asus A7N8X is, till date, the best motherboard you can buy for AMD's Socket-A processors. The motherboard is based around nVidia's nForce2 chipset.

On the features front, the board comes with two Gigabit adapters and one 802.11b Wi-Fi card for wireless connectivity. The SoundStorm audio processing unit is capable of decoding Dolby sound. The performance of this board is trailblazing, the overclocking capabilities excellent and it even remains fairly stable on overclocking.

Runner-up:
Asus K7V600



Multifunctional Devices

WorkGroup MFDs

Samsung SCX-4216F

Specs: 600x600 dpi, 16 PPM, 250 sheets, 4800x4800 dpi scanner, 160 pages fax memory and super G3 compatible

Our Verdict: The laser SCX-4216F MFD from Samsung offers an excellent balance of performance and features. A good printer unit, a reasonably good flatbed scanner and faxing capabilities make it an ideal choice for an office.

Runner-up:
HP LJ3380



Heavy Duty MFDs

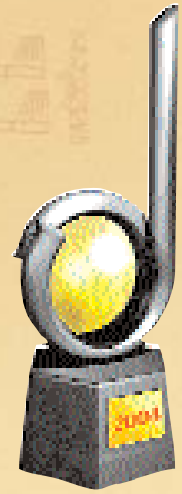
Samsung SCX-5315F

Specs: 15 PPM, 1,200 dpi, USB/Parallel interface, 600x600 dpi scanning, 550 sheets capacity, 320 pages fax memory and 80 location speed dial

Our Verdict: Samsung's SCX-5315F is a huge and sturdy machine. The printing unit is based on a copier engine and provides good economy. The scanner unit, although slow, is up to the mark. Copying is fast and additional features such as clone, duplicate, and paper save give the SCX-5315F the edge.

Runner-up:
Xerox M15i





Flashback To December 2000

Asus A7V
Specs: VIA KT133 Chipset, supports 1 GHz AMD processor, 1.5 GB PC133 SDRAM.
Evolution: As of today, the Asus A7N8X-E is a powerhouse, and will run rings around the Asus A7V. The Asus A7V was then king, but it cannot stand up to the latest boards. The A7N8X supports an AMD processor up to 2.4 GHz and memories running at 400 MHz. While the lowly Asus A7V was priced at Rs 12,000, the new, technology-packed A7N8X is priced at Rs 8,000 only.

Multifuntional Devices (All-in-ones, as they were then called)
Evolution: When MFDs were introduced in the market, they weren't successful thanks mainly to reliability issues. Also, many of the units didn't perform as good as their standalone counterparts did. Manufacturers were pushed to the drawing boards again and they came out with really good machines that combined three or four devices into a single unit. As of today, they have evolved to such an extent that they produce results on par or better than their standalone counterparts.

Portable Audio Devices

Flash Memory Audio Players

Creative Rhomba NX



Specs: 128 MB, 2 AAA batteries, FM Tuner, Voice/FM Recording, 62 gm.

Our verdict: The Creative Rhomba NX provides excellent audio clarity. This, combined with features including voice recording, FM recording and line-in encoding, makes it a great buy. The inbuilt FM sensitivity option lets users adjust the signal strength of the FM tuner, a feature that we did not find in any other player in this category. Bundled with quality earphones, the Rhomba NX is a treat for audiophiles on the move.

Runner-up: **Creative MuVo Slim**

Micro Hard Drive-Based Portable Audio Players

Apple iPod Mini

Specs: 4 GB, Internal Lithium Battery, USB 2.0/FireWire, Contacts, Alarm, 102 gms.

Our verdict: The large display on the iPod Mini is a breeze to use; it displays six lines at a time, making browsing through hundreds of tracks easier. With 22 inbuilt preset equaliser modes, it more than makes up for not having a customisable equaliser. Features like alarm, calendar and contacts take functionality to a different level. Pocketable and solidly built, the interface and button controls are designed for one-handed operation. With decent battery life, good audio quality and support for various formats, the iPod Mini is an outright winner.

Runner-up: **NA**



Apple iPod 20GB

Specs: 20 GB, Internal Lithium battery, USB 2.0 / FireWire, Contacts, Alarm, 158 gms

Our verdict: Scoring the highest on various parameters, the iPod 20GB easily beat contenders in this category. Unbeatable in ease of use and build quality, this fourth generation iPod scores over competition with the same features as the iPod Mini and is a great player for those who like to carry their entire collection. Though battery life was not the best, ergonomics, intuitive user interface and performance make it the winner.

Runner-up: **NA**



Printers

SoHo Printers

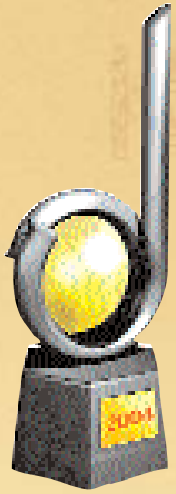
Canon Pixma iP4000

Specs: Five Colour Ink tanks, 4800x1200 dpi, PictBridge-compliant, Duplex printing and CD-R printing

Our Verdict: The latest crop of printers from Canon will live up to your expectations, with the right balance of performance and features. The Pixma iP4000 from Canon is the fastest inkjet printer we have tested so far. It took less than nine seconds to print out our test page where other printers take 14 seconds to do the same job. Printouts from the Canon iP 4000 are good and on par with competing models. Photograph printouts can be described as good, if not excellent. The new, though, design is aesthetically more pleasing and compact.



Runner-up: **HP Business Inkjet 1100dtn**



Flashback To December 2000

Creative Nomad II and Creative Nomad jukebox

Evolution: Portable audio players have come of age. They have evolved from the bulky Creative Nomad Jukebox to the sleek Apple iPod. Performance in terms of voice clarity, battery life and storage flexibility is better than what it used to be in 2000. A direct comparison tells us that the Creative Nomad Jukebox offered 6 GB storage only for music tracks while Apple's iPod offers 60 GB with the ability to store Photos, documents and music. Average battery life then was no more than 6 hours whereas today, you can easily get 15 hours of continuous play.

Epson Stylus Colour 880

Specs: USB/Parallel interface, 2400x1200 dpi, 100 pages, input paper tray

Evolution: Printing quality has improved to such a point that inkjet printers are now used for printing photographs. Features such as duplex printing, PictBridge compliance have also been added to the feature list. Printing speeds have improved drastically. The Epson Stylus Colour 880 was priced at Rs 21,800, three times the amount you will spend today for a decidedly better product.



Servers

Entry level Servers

Acer Altos G520

Specs: Xeon 2.8GHz, E7320 Chipset, 8 GB maximum memory support, 512 MB RAM, 10,000 rpm SCSI 80 GB HDD and Ultra 320 SCSI Adapter

Our Verdict: The Acer Altos G520 with the Xeon processor and Intel E7230 chipset is upwardly scalable and offers excellent headroom in terms of adding an additional processor. The motherboard supports around 8GB of memory—good from the upgradeability point of view. PCI-Express offers enough bandwidth for devices such as Gigabit Ethernet, which are rather restricted on today's PCI bus.



Overall, the Altos G520 is an excellent server machine as it offers the right kind of balance in terms of power and upgradeability.

Runner-up:
HP ProLiant ML-110

Speakers

5.1 Speaker Systems

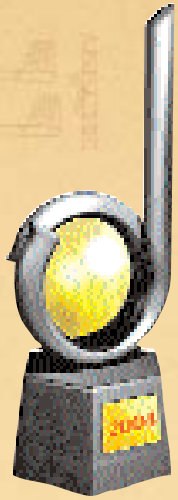
Creative Inspire 57

Specs: 35 Hz to 20 KHz frequency response, Satellite 7W, Centre 21 W, Subwoofer 30 W, Support for Dolby Digital, DTS, Dolby ProLogic and CMSS.

Our Verdict: The Inspire 5700D from Creative has a comprehensive feature set, the most important being the presence of Digital/Analogue inputs and a full-featured remote. Performance is inspiring, with clear treble and deep bass.

Runner-up:
Creative MegaWorks 550





TV Tuners

Internal TV Tuner Cards

Compro VideoMate TV Gold Plus

Specs: MPEG 1/2 Capture supported, 720x576 maximum resolution supported and Nicam Stereo

Our Verdict: Compro's Videomate TV Gold Plus is an excellent TV tuner card characterised by good quality signal reception. The card can tune to most channels perfectly without any human intervention. The bundled software is excellent and provides an easy interface for most users.



Runner-up:
Mercury TV Tuner Card

Creative Desktop Theatre DTT2500D
Specs: Satellites 7 W, 21 W Centre, 20 W Subwoofer, support for Dolby Digital
Evolution: The Desktop Theatre DTT2500 is very similar to its present-day incarnation—the Inspire 5700D. The biggest difference is that compliance to various audio standards has increased. This results in true convergence of conventional audio with the PC, and so, DVDs can be played with great results on a PC. Another factor is the price: the DTT2500 was then priced at Rs 33,000. The present-day Inspire 5700D costs Rs 24,000!

Wireless Devices

802.11g Access Points

Buffalo WBR2-G54

Specs: 4 LAN ports, One External Antenna port, WEP and WPA Encryption, Firewall and Wireless Bridging offered

Our Verdict: This 802.11g access point from Buffalo fared well in all the tests we put it through. It has a good data transfer rate and offers a reasonably good feature set for setting up a personal access point.



Runner-up: **D-Link DWL-2000AP+**

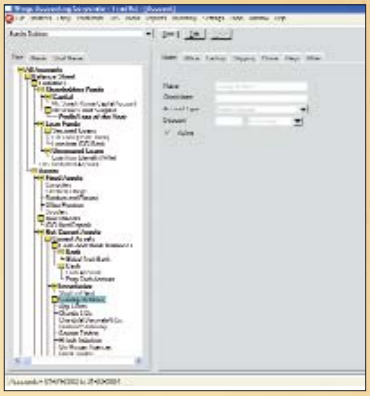
SOFTWARE

Accounting Software

Wings 16

Our Verdict: What first grabs your attention about this accounting package is the neat Menu layout with dividers to group and sub-group functionalities. There's almost no feature that Wings lacks and it also presents a host of new features such as a History file, Pending Bills, Yearending process, Peak Balance, etc. It also allows restricting users on a field-by-field basis. However, Wings won in this category because of its reporting capabilities. It provides a whole gamut of reports, right from basic trial balance to advanced reports. Great features, simple user interface, and good reporting abilities make Wings 16 a highly recommended accounting package.

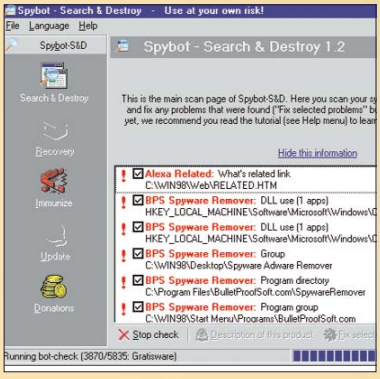
Runner-up: **TALLY 6.3**



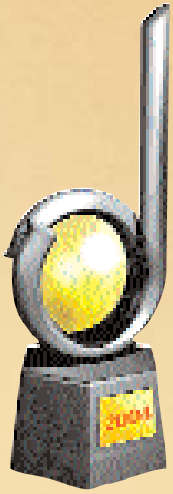
Anti-Spyware

Spybot / Ad-Aware

Our Verdict: Spyware are a bane for any PC connected to the Internet. Not only do they send information about your browsing habits to the outside world, they also spread malicious Trojans and key-loggers. Anti-spyware applications help in removing such infections, and Spybot's Search and Destroy is the best application you can reply on. The simple interface is easy to grasp and one can get a hang of the basic working within minutes of installing the program. When it comes to the task, Spybot detects most adware, spyware, Trojans and key-loggers without a fuss. The program offers extensive features and can be customised to your liking. We recommend Spybot for its accuracy in locating spyware, extensive feature sets, and of course, its unbeatable price—free!



Runner-up: **Ad-Aware**





Antivirus

McAfee VirusScan 9.0/ Norton Antivirus 2005

Our Verdict: When it comes to securing your system, you can bet your life on Antivirus solutions from Symantec and McAfee. It is hard to differentiate between the products of these two vendors, as both are great at virus detection and cleaning. When a new virus is discovered, an antidote is released within hours by both vendors.



Moreover, both products are backed by regular updates and can be updated quietly in the background. Both require some serious system resources, however, and hence a quick glance through 'system requirements' is a must before you make that buying decision.

Runner-up: **Avast antivirus** (free for home use)

CD-Writing

Nero 6 Ultra Edition

Our Verdict: Nero Burning ROM has been the most popular burning software of late. The new Nero 6 Ultra Edition is a complete content creation suite. The core functions are still intact, with very few changes- mostly to the interface, which now looks jazzier. An easy and intuitive interface for beginners is retained, courtesy modules such as Nero Wave Editor for editing sound files, Nero Cover Designer to create different types of covers, inserts, etc, and



Nero Express. New features include a DVD authoring module, multi-track audio production, system backup and video capturing capabilities. We recommend Nero 6 Ultra Edition to people who want an all-in-one solution to create and burn any DVD or CD format imaginable.

Runner-up: **Easy Media Creator 7**

Data Backup

SyncBack Freeware 3.2.5

Our Verdict: Digitally stored data is vulnerable—it can get wiped out due to a virus infection, hard disk crash or myriad other reasons. While there are many utilities that help you take regular backups of your work on external media, network drive or other partitions, SyncBack goes one step further and offers backup of data to an ftp server. This is quite useful as you can keep a backup on an FTP server and can work on it from any

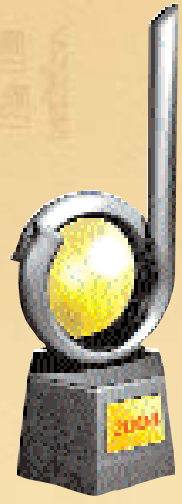


end of the world. SyncBack offers an intuitive interface to work with, you can select between a backup profile and a synchronised profile. Both these profiles can be customised to the smallest detail. Backups can also be scheduled to happen without user intervention. Also SyncBack has a small memory footprint and hence does not hog system resources.

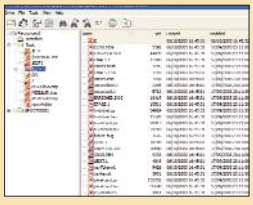
Runner-up: **Second Copy 2000**

Data Recovery

R-Studio 2.0



Our Verdict: R-Studio Data Recovery is comprehensive and excellent data recovery software. R-Studio 2.0 supports FAT 12 / 16 / 32, NTFS, Ext2FS (Linux) file systems and recovers files from physical disk and disk located on remote computers. R-studio can recover files even after FAT damage, MBR destruction or virus infection. To a certain extent it



can even reconstruct damaged RAID volumes. The interface is a little shoddy and requires some time to get used to, but when it comes to recovering lost files R-Studio 2.0 is something you can rely on.

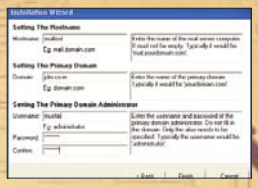
Runner-up: **Ontrack EasyRecovery Pro**

Antivirus

Evolution: Antivirus applications are more or less unchanged from four years ago. With the proliferation of worms through email, P2P, IMs, etc., the new breed of antivirus now come with modules that scan, not only the physical drives, but inbound and outbound mails, P2P software, IMs, etc. Apart from these primary functions, new antivirus applications are packaged with firewalls and spyware protection programs. Four years ago Norton Antivirus 2001 was the winner, and again it has proved itself to be one of the best.

E-Mail Server Software

Merak Mail Lite 7.0.1



Our Verdict: Merak Mail Lite has a conventional application-based interface that is quite similar to the browser-based admin interface. Even though it did not have an inbuilt dialler, it integrated well with the one that comes with Windows. This software allows you to restrict users as per the size of their mails and also the number of mails per day. These little features help you manage your mail traffic on the Intranet. Merak Mail Lite excelled in identifying spam. The software bundles along goodies like calendaring server and an instant messaging server.

Runner-up: **MDaemon**

Firewall

ZoneLabs ZoneAlarm

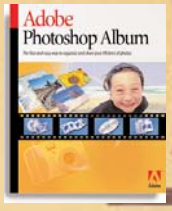


Our Verdict: ZoneAlarm Pro 5.5 from Zone Labs is the best software firewall available to desktop users for personal use. ZoneAlarm is significantly better than its competitors, and the all familiar tabbed interface is extremely simple to use. Zone Labs have reduced the irritating confirmation pop-ups that are still a pain with other products. The firewall protection is effective against inbound and outbound traffic. It is highly resilient to attacks and difficult to fool around with-even a manual shutdown of process does not put ZoneAlarm off track.

Runner-up: **Norton Personal Firewall 2005**

Image Management

Adobe Photoshop Album 2.0

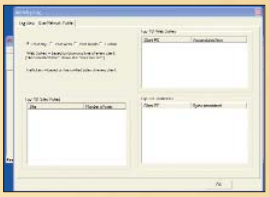


Our Verdict: Adobe's Photoshop Album 2.0 is a sequel to the original Photoshop Album 1.0 that marked Adobe's entry in the image management arena. While retaining most of the features from the older version, Album 2.0 has few new features to talk about. The timeline that runs across the top shows the number of photos taken in a month as drop down bars. The main window shows thumbnails of your photos and a slider lets you control the size of the thumbnail—a new feature. Image editing tools are good for a program of this level, but you may be disappointed if you are used to Adobe Photoshop. Overall, an excellent tool but upgrading is not recommended since there are hardly any new features to pay for.

Runner-up: **ACDSee 7**

Internet Sharing Software

Sygate Office Network

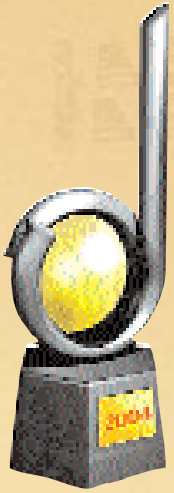


Our Verdict: Sygate Office Network is one of the best network management software you could come across. It is loaded with features and sports an extremely simple user interface. The software has more features than any other contender it this category-something a network administrator would love. The 'Disconnect If Idle' feature is particularly useful: the server keeps constant track of users, and if one of them is idle for a certain time, the connection is freed up for someone else to use. This helps reduce dial-up costs. The activity log is the best across the board, with real-time monitoring and a history viewer, in addition to auditing. This is a true professional internet sharing software.

Runner-up: **WinGate**

Firewall

Evolution: With the rapid deployment of networking across corporations and homes, unauthorised access to your PC is a real threat. Firewalls protect your PCs from malicious attacks, such as port scans, ping, floods and other new threats and inform you of unauthorised traffic flow. Four years ago, Norton's Personal Firewall 2000 provided the necessary deterrence. Fast forward to 2004 and we have Zone Labs ZoneAlarm Pro 5.5 coming out as the best available firewall on the market today and exceeding even WinGate.





Linux Distribution

Suse Linux 9.1 Professional



Our Verdict: While most Linux pros will swear by Redhat Linux, SuSE Linux 9.1 professional has its own way of enticing novice and seasoned pros alike. Right from the installation to the customisation phase, SuSE Linux has something extra to get your attention. The installation is simple and the graphic interface makes it easy for beginners. The packages in the 5-CD set are extensive enough to cover demands of programmers, administrators and casual users. Updates can be configured to be downloaded regularly. We recommend SuSE 9.1 Pro to users who are not confident of using classic and traditional Linux flavours.

Runner-up:
RedHat Enterprise Linux Professional WS

OCR

ABBYY FineReader Professional 7.0



Our Verdict: ABBYY Software's FineReader 7.0 Professional Edition raises the bar on Optical character recognition solutions. This newer version comes with product activation and requires you to have Internet connection for completing the activation process, failing which, it will run in a stripped down mode. The interface is simple, the software compatible with most TWAIN devices. Accuracy of the new version is as good as the old one and is now faster. Features like direct scanning of documents into MS Word 2003, MS PowerPoint, etc, makes this software fascinating to work with.

Runner-up: **OmniPage Pro 14 Office**

Office Suites

Microsoft Office 2003



Our Verdict: With the latest release of its Office suite, Microsoft has improved FrontPage and Outlook a great deal. With the addition of OneNote (a note taking application), the improvements hold a lot of promise, especially for corporate users. Support for XML means document sharing and porting is a lot easier, and the suite's application programming capabilities are much better. However, the rest of the applications in the Office suite-Word, Excel and PowerPoint-have minimal improvements. We don't see significant improvements with this release, though. Office 2003 is still a cut above the other players.

Runner-up: **OpenOffice.org 1.1.3**

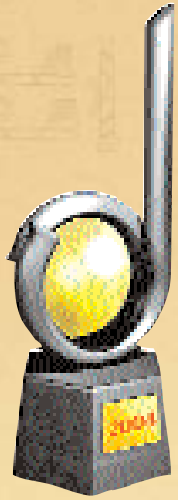
PVR Software

PowerVCR II Standard Edition



Our Verdict: Armed with top-of-the-line features such as time-shifting and instant replay, PowerVCR II makes TV-viewing enjoyable. With the time-shifting feature, you need not wait for a commercial to answer nature's call. Use the 'Instant Replay' button to watch the fall of wickets in a cricket match. PowerVCR II is very user-friendly—a small window pops up after its installation to help you set up the channels. It provides pre-defined profiles — MPEG-2 Excellent, MPEG-2 Superior, MPEG-2 Good and MPEG-2 Average-to capture video. It can convert the captured video from, or to, any of these formats, without the need for a third-party converter.

Runner-up: **Intervideo Win DVR**



Productivity Suite

Evolution: Microsoft's Office remains the most used and liked office productivity tool for professionals and casual users. Excellent features, an irreproachable interface, blinding legacy and no competition, lends Microsoft's Office 2003 the gold medal.

Linux

Evolution: Back in 2000, Linux OSes were the play tools of curious, knowledge hungry geeks. However, to survive in this Wintel world, evolution was the only way out and look what a leap they have taken in four years! Four years ago, Linux was notoriously known for hardware incompatibility and driver issues but today, the community effort has done away with such issues.

SuSE Linux's commitment to provide the best in Linux got them the Zero-one award in 2000 and this trend continues today. Their commitment is consistent and truly commendable!

Jumpstart



A Cell Phone Canvas

M F Husain, India's best known painter is not content with adorning walls. His works will now liven up your cell phone

Illustration Binesh Sreedhar

Preethi Chamikutty

Art, for long, has been the constituency of a chosen few and guarded well by the barriers of price. However, with changing times and evolving technology, art is ready to enter the mass domain.

The most recent step involving technology in this regard is the availability of M F Husain's paintings on cell phones. Swarup Group of Companies (SGI) and Coruscant Tec have taken the initiative of turning this dream into a reality. But is there really a market for such products?

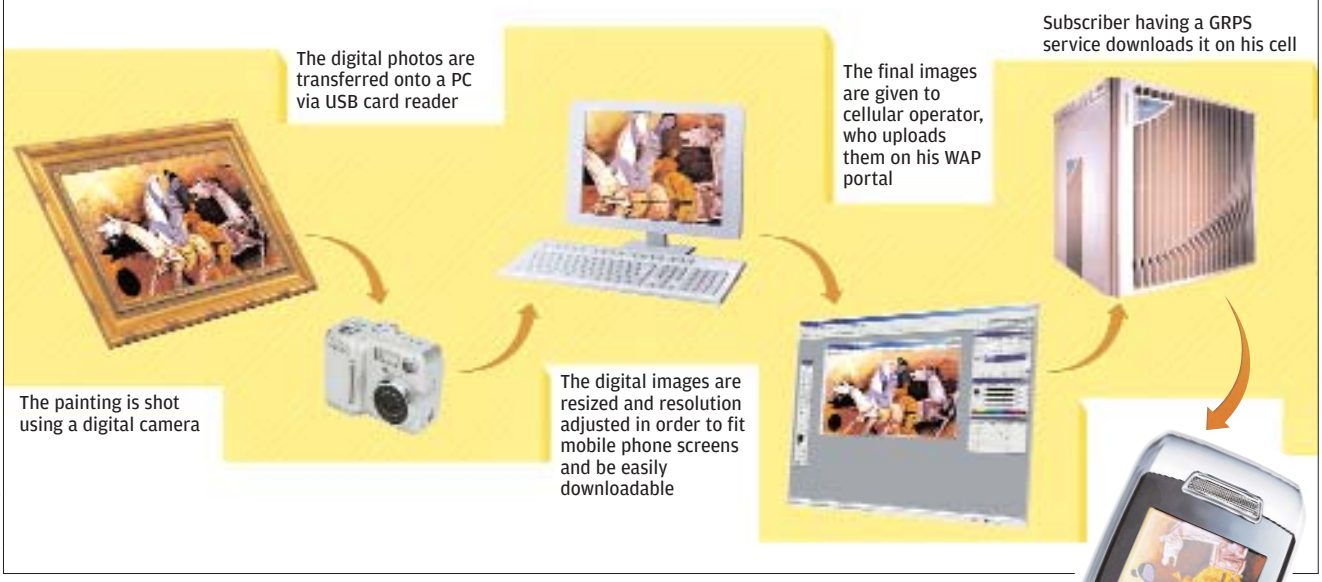
Globally, the penetration of multimedia mobile phones is as high as 49 per cent. Entertainment services comprising pictures, ringtones and games have reached penetration rates of 30-35 per cent. Mobile entertainment worldwide is estimated to grow to $11 billion by 2007. In India itself, it is estimated to become a $1 billion industry by 2009. With such encouraging figures, the mobile content market is just taking off.

Who's Who

Says Guru Swarup Srivastava, chairman and managing director, SGI, "I was looking at adding something more to my investment portfolio; a new dimension to my business is what I was mainly interested in. Today, there is the option of investing in a mutual fund—art. Here, for example, let's say an investment of Rs 100 crore has to be done in purchasing paintings. A joint investment can be set up between ICICI Bank, BNP Bank, Airtel and any profits earned through the sale of paintings would be earned as a dividend by those involved."

Srivastava looked at the work of about eight to nine different painters before finalising on Husain's work. "I decided on Husain*saab* because he is a well-known personality and also an established entity the world over. I realised that the multiplicity factor on investments was higher

From The Canvas To Your Cell Phone



Infographic **Vijay Padaya**

with him," points out Srivastava. Srivastava has purchased 100 paintings from the 'Our Planet Called Earth' (OPCE) series at for Rs 100 crore.

When Coruscant Tec approached SGI with the proposition to digitise the paintings, it was another way of doing business. "I was excited at the idea of digitising the paintings. It was a very good opportunity for investment," says Srivastava. SGI also plans to create a Website with IIT Mumbai's aid, which to enable downloading of screensavers and/or wallpapers.

Coruscant Tec is a wireless technology company specialising in mobile business applications, mobile entertainment, mobile marketing and mobile commerce.

Ajay Adiseshann, managing director, Coruscant Tec, says, "When we read about this deal between Srivastava and Husain, we thought digitising Husain's paintings would be a good addition to our profile."

What is Digitising?

Digitising converts non-digital data into a digital format that can be then distributed or displayed using digital media including the Internet and mobile phones.

To digitise paintings, for example, a photographer first captures the paintings with a digital camera, and the resulting images are transferred to a PC. This also eliminates any need for scanning making the images first-generation.



"A new dimension to my business is what I was interested in
Guru Swarup Srivastava
Chairman and MD, SGI

The RAW digital images are at a very high resolution but most mobile phone screens can display a maximum of 64k colours.

Most of them usually support only 4k colours so the resolution of the pictures taken has to be reduced. Having a high-resolution picture is pointless as this would result in a very large image size and since the wallpapers are going to be downloaded over slow GPRS connections in most cases, the image size is kept low.

The next step involves resizing the dimensions of each image to fit all popular phone screens in the Indian market. For example, for the Samsung C100, the images need to be of 128x128 pixel size, whereas for the Nokia 6600, the required wallpaper size is 174x132 pixels.

All resizing and image optimisation is done using Adobe Photoshop. Once ready, the images are handed over to the cellular service provider. A subscriber can then request a wallpaper by browsing through the wallpapers displayed on the service provider's WAP portal.

Offer On Sale

Twenty-five of the 100 paintings of the OPEC series have so far been digitised. The first lot of 25 became available to customers around mid-December 2004. Price, though, was undecided and although it was to be 'competitive', it could play a major role in the popularity of the concept. Will any more painters' work be available in the future? "We would like to see what the response is like and then decide on future ventures," says Adiseshann.



Future Market

Prakash Bhende, a fresco and tempera style painter is next on the list of SGI. Bhende recently held an exhibition of his collection in Mumbai where nine paintings were purchased by SGI. Bhende is also enthusiastic about having his paintings digitised.

"Digitising is a good idea as it helps the creativity reach a wider audience. We are mainly concerned about creativity and if a little money comes out of it, it's even better," says Bhende.

With art gradually gaining acceptance as an investment option, steps like these would go a long way in enhancing the popularity of paintings among the masses. ■

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Play ON!

2005 brings with it new games with eye-popping visuals, the associated computer upgrades, and the resulting disappearing bank accounts. We present a comprehensive test of 32 graphics cards to help you blow your money wisely

Bhaskar Banik &
Nikhil Dhamapurkar

Another year is upon us; the time to upgrade your computer is at hand. We could think of nothing better to start the upgrade cycle than a new video card. This cycle will probably be the last time you will need an AGP card. For one, you will definitely upgrade to a DirectX 9-based card, which will be good for at least two more years, and by then, PCI-Express (PCI-X) cards would be common and ready to buy!

Of course, PCI-X has already made an appearance in our market, but the technology is still finding its feet. It will take PCI-X at least two more years to go mainstream from the niche it currently enjoys. Another point to note is the fact that games scheduled for release in the near future will not be able to take advantage of a PCI-X solution. They will perform just as they would with an AGP card—making your investment in AGP now somewhat future-proof.

If you are a gamer who demands the latest and the greatest right now, you can opt for a high-end video card, which will serve you well for a while, ensuring that you do not need to change platforms for at least a while. However, if PCI-Express is what you are looking for, you will


Imaging Atul Deshmukh

need to upgrade your motherboard and CPU as well!

Another telling factor is that the upcoming Microsoft OS, code-named Windows Longhorn, will need a DirectX 9-compliant video card, if you wish to appreciate its interface in all its glory. It has lots of eye candy which can only be experienced through a DX 9 card.

BUDGET VIDEO CARDS

The budget segment consisted of eight cards that had the same chipset, which was the FX 5200 from nVidia. This category was specifically created for users who are more into using their computers for general purposes, with a little bit of gaming thrown in. We look at what the cards had to offer to us.

Their Features

Half the cards we received were of the XFX brand, and they offered a versatile range from the absolute minimum in video memory to the maximum possible available in this category. Only two out of the eight cards featured dual-monitor connectors. On the bright side, all the cards featured video-out, which can be used to connect a TV. And why would you connect a TV to your computer? Try watching a DivX movie on a TV, and you probably wouldn't ask that again.

The XFX Personal Cinema was the only card in this category to offer a TV Tuner chip on-board. This definitely gave it a plus, since you need not install a separate TV Tuner card for watching TV on your computer. However, that does not explain the Rs 11,000 price tag, since you can easily get a 9600XT at that price. That was about all that the cards in this category had to offer. The rest of the cards were all just vanilla, and expectedly so, since they are not priced high.

Their Performance

The performance of the cards across the board ranged from mediocre to excellent, given the price these cards retail at. The MSI and the XFX reigned in this category. Surprisingly, the XFX GeForce FX 5200 64 MB posted excellent results compared to most 128 MB cards, and in fact, beat both the models from XFX itself. The MSI TD-128 FX 5200 was another good performing card in this category.

The Gigabyte did relatively well, but was not good enough to get ahead of the above three cards. The 5200s by themselves are crippled, going by the number of pipelines and core and memory speeds.

Most users will have to make do playing at a resolution of 800 x 600 using these cards.

We ran *Half-Life 2* and *Doom 3* as Tier 1 tests (See box *"How We Tested and Decided the Award Winners"* on page 62 for details on Tier 1 and Tier 2 tests) on these cards, because these are the latest games available—and if the cards we tested are not able to play them even at low resolutions, they may not be worth investing in at all. *Doom 3* is a real resource-hogger. All the cards suffered and posted unplayable frame-rates at 800 x 600, but were okay at 640 x 480 (although 21 frames is still very jerky for playing a game), giving reasonable frame-rates. With *Half-Life 2*, the cards were more than happy and posted good frame-rates, with the XFX 64 MB giving 35 fps at 1,024 x 768. (These frame-rates were posted after the DX9 fix was applied for the cards in the game. See Box *"OEM Deals and How They Affect Your Gaming Experience"* on page 78)

The best performers were the MSI and the XFX with the Gigabyte following closely

A similar scenario was observed with *Far Cry*, with the settings at Medium in the game. The frame-rates at 800 x 600 were enough for any user to play the game smoothly. The XFX FX 5200 128 MB (non-TV Tuner) card was disappointing, and gave some of the most rock-bottom frame-rates amongst the whole lot. In our performance tests, the best performers were the MSI and the XFX, with the Gigabyte following closely.

First-time entrant PNY gave good frame-rates, but could not hold its own against the above-mentioned cards.

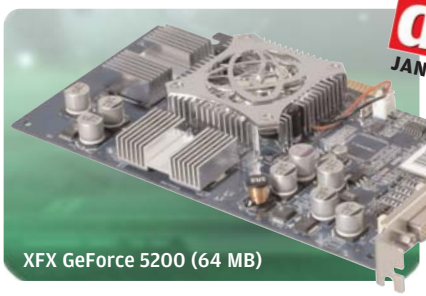
Overall, in the budget category, the cards gave us the expected results, and we filtered out the best amongst them to arrive at the winners.

The Winners Are...

From the results of the performance tests, it is clear that the winners were going to be from the XFX stables, given the frame-rates that they posted in each game. Agreed, the frame-rates in *Doom 3* were nothing to write home about, but it does prove a point: if you want to play games like *Doom 3*, an FX 5200 is not the card for it—and you will definitely need to spend some more in the graphics department. On the



XFX Geforce FX 5200 (256MB)



XFX GeForce 5200 (64 MB)

other hand, with games such as *Far Cry* and *HL2*, the 5200 proves to be more than enough for that few hours of weekend gaming.

The XFX GeForce FX 5200 256 MB and the XFX GeForce FX 5200 64 MB were the overall winners in this category not only because of their price but also because they performed well. These two get the Digit Best Buy Gold Award and the Best Buy Silver Award respectively.

GAMING CATEGORY

LOW END VIDEO CARDS

This category was created keeping in mind the falling prices of last year's mid-category cards. An ATI 9600XT can now be purchased for Rs 10,000 or less depending on the manufacturer. With the arrival of more high-end cards, these cards have now been pushed to the low performance category but are still not low enough to fit into the budget category. There were 15 cards in this category and the fight a tough one. Here is how they fared.

Their Features

Almost all the cards had similar features with some featuring dual DVI inputs. One thing that should be understood is that when you are paying more than Rs 10,000 to get a video card; the criteria should always be to look at their performance rather than the software bundled along. Dual monitor inputs were present on all these cards as was a video-out port.

The games that are bundled with the cards are limited and normally include demos from various games and some older games bundled with the card. In our comparisons, both the Gigabyte cards included the same software, which was a game and PowerDVD5 software, but one video card was priced higher than the other.

This underlines our assertion that the software bundled acquires a secondary status to the performance of the card and in your buying decision, it should always be performance that counts and not the software or other features the manufacturer bundles.



Half-Life 2 **on the XFX GeForce FX 5700 Ultra shows off extremely good visuals**

How We Tested And Decided The Award Winners

We received 32 cards for our tests. The cards were differentiated into two explicit categories—Budget and Gaming. Gaming was further divided into three subsections—Low, Medium, and High.

We had two separate test beds for testing the cards. One was made specifically for testing the budget cards, and the other was for the Performance category. The budget category test bed consisted of a Pentium IV 3.2 GHz, with 512 MB DDR 400 Corsair TwinX memory modules, and a 120 GB Seagate SATA hard drive installed on an MSI 875-P NEO.

The Gaming test bed consisted of an AMD 64-FX 53 running on an MSI 6702E motherboard with a Seagate 40 GB ATA100 hard drive with 1GB Corsair TwinX memory modules.

The Budget category included cards that had the bare minimum clock and memory speeds and were crippled when compared with various DirectX 9 features present on the higher cards. The prices of there cards were also noted, since these were the lowest-priced ones across the category.

Tier 1 Tests

In the Tier 1 tests, we used three games and one synthetic benchmark. The games we used were *Doom 3*, *Half-Life 2*, and *Far Cry*, and as the synthetic benchmark we used 3Dmark 2003. In Tier 1, the games were run at three different resolutions—640 x 480, 800 x 600 and 1,024 x 768, and the synthetic benchmark was run at 800 x 600 and 1,024 x 768. The in-game settings were kept to Medium, and tri-linear filtering was turned on. The driver settings for the cards were set at the highest performance—whatever was possible. Vertical Sync, AA and AF were completely turned off.

Tier 2 Tests

In the Tier 2 tests, we used the above mentioned games as well as *Call Of Duty*, *Halo* and the synthetic benchmark 3Dmark 2005. For the Performance Low cards, we tested them on only two resolutions—1280 x 1024 (without AA or AF) and 1,024 x 768 (with and without AA; AF was off for all the tests.)

For the mid and the high-range cards, we tested them on the above mentioned resolutions and also at 1,600 x 1,200 (No AA, AF). Vertical sync was turned off, and in-game settings were kept at the maximum. 3Dmark 2005 was used with high-end chipsets (5900 and higher for nVidia, 9700 and above in the ATi camp). We also used *Need for Speed Underground*, and took screenshots from that game along with *Half-Life 2* and *Doom 3* for our image quality tests.

How We Awarded

Only Tier 1 tests were run on the Budget cards, and the scores were calculated. The highest performing cards were awarded the Digit Best Buy awards.

For the gaming cards, the Tier 1 tests were run on all the cards and a compiled result of the scores for each card was calculated. From the scores that we got, an average score was calculated to give us the best-performing cards in all three subcategories. These cards were then put through the Tier 2 tests. The product that scored the highest in the overall score was adjudged the winner of the Digit Best Buy Gold Award for its category. The runner-up received the Digit Best Buy Silver Award.

Their Performance

In our Tier 1 tests, the cards based on ATi Radeon 9550 chipset suffered badly in *Doom 3*. Although they did post playable frame-rates at lower resolutions, the price they retail at does not justify the performance. In fact, *Doom 3* was the overall stress test for all the cards we tested. It brought almost all the cards in the low category to their knees including the 9600s and the 5700s. The 5600 chip from last year was missing this time and was replaced by a new and improved 5700. The clock speeds have been cranked up as have the memory speeds with the Ultra's showing the most improvement. Similarly, the 9600XT is the improvised version of the 9600PRO with more memory and increased clock and memory speeds.

We tested all the cards for the Tier 1 tests and then filtered out four from each category to run the Tier 1 tests on. The criterion we decided to apply was performance. Better the frame-rates, higher the chances of it going into the next tier. In our Tier-1 tests, the Gigabyte duo and the PowerColor and XFX cards posted some of the best results.

In the tests, we kept the in-game settings across all resolutions at medium. At this medium setting, the PowerColor 9600XT was on fire and gave excellent frame-rates on all games beating the 5700 Ultra, which has a higher memory speed and also has a faster memory type. The cards that made it to the next level were the PowerColor 9600XT, the XFX 5700 Ultra and the Gigabyte 5700 and 5700 LE.



XFX GeForce FX 5700 Ultra (128 MB)

In Tier 2, we cranked up the resolutions and also the in-game settings. All settings were set to 'High' and the minimum resolution we started from was 1024 x 768. This is where the XFX GeForce FX 5700 Ultra shone bright. With its higher memory speeds, and optimised pixel pipelines which handled two textures per pixel, it posted the best frame rates in Tier 2.

The PowerColor Radeon 9600 just went limp here; in fact, it crashed twice with visible artefacts in the higher resolutions posting a measly frame-rate of approximately 5 fps at 1280 x 1024 in *Far Cry*. On the other hand, the card did well with 4X AA ON, at 1024 x 768 in both *Half-Life 2* and *Far Cry*. But *Doom 3* was simply not its strength.

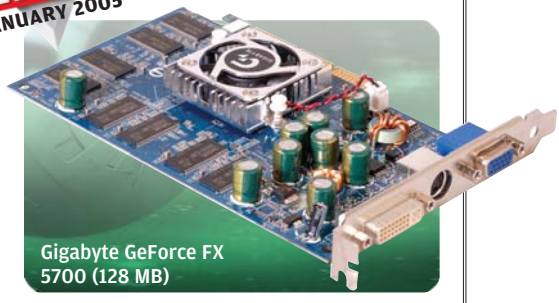
The XFX GeForce FX 5700 Ultra was just waiting to be turned on at the higher settings. The ceiling for this card was similar to others in *Doom 3* and with 4X AA at 1024 x 768, cranking up the resolution any higher spelt 'doom' for the card and the game was simply unplayable. However, the 5700 Ultra provided very good frame rates for all other games we tested and can be considered for future games.

The Gigabyte 5700 was the second in line to lay claim for the throne in this category and posted good frame rates. With the competition heating up, it was difficult for us to look for the runner-up to the prized Digit Best Buy award.

The Winners Are...



One thing you need to keep in mind is that the cards we tested in this category are only good enough to play games up to a resolution of 1024 x 768. You may get playable frame rates at higher frame rates with high in-game settings in some games, but if you don't, don't be surprised. You can rest assured, however, that these cards can deal with all games at higher resolutions if the in-game eye candy is kept low.


Gigabyte GeForce FX 5700 (128 MB)

The Tier 2 test results immediately reflected the first winner, which was the XFX 5700 Ultra 256 MB, because of the frame-rates it posted, it was awarded with the Digit Best Buy Gold Award.

The low performance of the PowerColor 9600XT at 1280 x 1024 resolution was definitely puzzling and we ran the tests not once, but four times to double check our results. Nevertheless, the results remained the same. However, the value for money that the PowerColor Radeon 9600XT offers is unmatched by any other card in this category.

If you are low on money but still want a decent card, this card will not disappoint. The card next in line was the Gigabyte GeForce FX 5700 128 MB, which ended second and was awarded the Digit Best Buy Silver Award.

Is PCI Express x16 Important?

PCI Express is the new technology that will invade consumer desktops starting this year.

Jumping up from 4X AGP to 8X AGP did not provide any major performance leap in terms of frame-rates in games. For the current crop of games that is played on desktops worldwide, AGP 4X is more than enough to provide the required bandwidth. However, the limiting factor is the memory management, which bottlenecks the data transfer. The increased bandwidth offered by AGP 8X does little to improve this. Card manufacturers have gone and improved the clock and memory speeds for the accelerator, but the overall system performance is not in their hands. Therefore, if you have a slower CPU and a faster card, games will still lag.

With PCI-e x16, the bandwidth has doubled from that offered by AGP 8X; however, the core issue still remains. Right now, any game that runs comfortably on an AGP card will do the same on an x16 card; however, the PCI-Express solution offers better data transfer rates for other components on the motherboard. The main reason companies are adopting PCI-Express is because there is a huge performance gain that can be tapped in all areas of data transfer from one component to another.

As always, moving on from AGP to PCI-e will be more of a transition brought about by market conditions than an option exercised by the end-user. As soon as the current motherboards start disappearing from the market and PCI-e becomes prevalent, you will have to go for a PCI-e solution. If you have an AMD 64 or Intel 3.2 GHz and above system with a good 4X or 8X AGP card, our suggestion would be to sit tight and not upgrade, since PCI-e will definitely not make Doom 3 run at 200fps at 1,600 x 1,200!

GAMING CATEGORY
MID-RANGE VIDEO CARDS

The 'Mid' category of cards was the smallest in terms of numbers: just three. The mid-level cards this year consisted of the high-end cards from last year. There were two ATI, both 9800 PRO's, from Club3D and PowerColor respectively, and one Gainward GeForce FX 5900 XT. With not much left to compare among the ATIs, it was finally performance that mattered.

Their Features

On the features front, the cards were plain vanilla with not much to talk about. With the regular bundle of old games and driver software along with cables and DVI adapter, formed the package of all three cards.

Their Performance

The clock speed is one thing that needs to be talked about here. Both 9800s were clocked at the same speed—which is a default 380MHz—the 5900XT, though, was clocked higher in terms of clock speed and memory speed. The pixel pipelines, however, are where the tables turned.

The 5900XT is more in the league of the 9600XT than the 9800PRO. It has four pixel pipelines as a standard but it can do pseudo eight-pixel pipeline operations. This, in non-technical language, means that it renders four conventional (colour + Z-order) pixels per clock, but is capable of performing eight operations per clock for Z pixels, textures, and stencil and shader ops, which makes it partially crippled. Also, it is a toned-down version of the 5900 Ultra in terms of clock speed and is placed just above the 5700 Ultra in terms of price and the difference is around Rs 250. This card is also termed as the 5900 SE in some cases.

In our Tier 1 tests, the Gainward 5900 XT blazed through the games. It gave more than acceptable frame-rates at high resolutions across all categories of games. The Club3D 9800 PRO 128MB made it through to the Tier-2 tests along with the Gainward GeForce FX 5900XT.



Gainward Geforce FX 5900XT

In the Tier-2 tests, where the in-game settings were turned on to high, the Gainward reigned supreme. But it could not come even come close to the 9800 in the *Call of Duty* tests, which left it biting the dust. In all other games, though, the ATi 9800 was second-best. Once again, we encountered the same problem in *Far Cry* at 1280 x 1024 where the card posted a measly frame-rate of 5 fps with visible artefacts. This did the card in all the more and the 5900XT came through to win this competition.

The 5900XT gives you the most bang for your buck

The Winner Is...

The 5900XT is a strange species. With its pseudo eight-pixel pipeline processing, it could have fit into the 'Low' category, and would have beaten the daylights out of all the other cards including the 5700 Ultra.

On the other hand, the pseudo processing feature also made it a candidate for the mid-level category and that's where it went in the end. But the performance that it offered was more than satisfying and it unquestionably gives you more bang for your buck. The Gainward 5900XT 128 MB is undoubtedly the winner of the Digit Best Buy Gold Award in this category.

GAMING CATEGORY
HIGH END VIDEO CARDS

In the comparison we carried last year, the 9800 PRO and the 5900 Ultra were the two top-of-the-line cards from ATi and nVidia respectively. Both cards had the 8-pixel pipeline architecture, running 256 MB of DDR RAM.

Cut back to the present, and we have the X800XT PE and the 6800 Ultra from the same manu-

OEM Deals And How They Affect Your Gaming Experience: Doom 3 & Half-Life 2

Two of the most awaited games this year were *Doom 3* and *Half-Life 2*, which we used for our benchmarks. Most gamers around the planet swear by the lighting effects used in Doom 3 and the water detail in *HL2*. However, are you sure that the card you have will give you the best visual experience when you play these games?

Doom 3 by far is one of the most taxing games when played with the High settings. Both nVidia and ATi cards give comfortable frame-rates when played at lower resolutions. As you crank up the resolution, the nVidia cards just zoom past the top-end ATis, giving a performance increase of more than 30 per cent. So does that mean that ATi cards cannot play Doom 3 well? There is some truth to this. The ATi drivers are comparatively bad on OpenGL implementation vis-à-vis nVidia. Another reason is that nVidia's 6-series architecture is optimised precisely for games such as *Doom 3*, since they worked more closely with the ID team during the development of the game. It is clear from this that any game based on the *Doom 3* engine would most probably favour nVidia cards in the future.

On the other hand, there is *Half-Life 2*. Similar to all games, when you start the game it auto-detects the video card and provides you with a setting that gives you the best in visual quality for the card that you have. Fair enough, but if you check the Advanced Settings in the Video menu option, you may be in for a surprise. With the nVidia 5-series video cards, the DirectX option is set to 8.1 by default in the game. But with the 9-series ATi, the default DirectX level chosen is 9. Surprised? We were too. After some research we got the real deal. Apparently, Valve designed the game to use 24-bit floating point instructions at all times in the game. ATi has 16-bit and 24-bit floating-point registers while the 5-series NVIDIA has 16 and 32 bit registers, but no 24-bit ones. Since 16-bit is partial precision it can be used both in DX9 as DX 8.1 implementations. As the 24-bit registers are absent in the nVidia card, the game checks for them, doesn't find them, and automatically implements DirectX 8.1 instead of DirectX 9! However, there is a way to run the 5-series cards in DirectX 9 in HL2. For this, start the console in HL2, and there, type in "dx_matlevel 90" without the quotes. This will make the card run the game in DirectX 9 at all times.

Oh, and before we forget, ATi has an OEM deal with Valve for *Half-Life 2*!

SLI Technology: What Is It?

SLI is an acronym for Scalable Link Interface, a technology originally developed by 3dfx for their Voodoo cards. Now that the company and their cards are history, (after nVidia gulped them out of business) the technology has been improved upon, and a spanking new version is out from nVidia.

In the current scenario, an SLI configuration needs two identical NV45 PCI-Express cards running on a motherboard with two x16 slots. These two cards are connected to each other using a small bridge-type PCB that connects them from above. In this manner, the card connected to the monitor becomes the master and the other card becomes the slave.

The technology aims to provide the user with an increase in graphics performance by rendering an image, using both the GPUs at the same time. The image to be rendered on-screen is automatically load-balanced by the driver, and the image is rendered on the screen. This is done dynamically for each image, and the load on each GPU is accordingly varied. In reviews done by Web sites that had the privilege of laying their hands on an SLI system, the percentage increase is almost 30 to 60 per cent at 1,600 x 1,200 with 4X AA and 8X AF in *Far Cry* depending on the image rendered. That is a difference of more than 20 frames in any given level!

Alienware, a PC major in the US, has developed technology called the Alienware X2 Video Array. The difference here is that the instead of just nVidia video cards, the Alienware array will let you connect any two identical PCI-Express video cards (like ATi X850s). Alienware uses its own proprietary software and a proprietary merger hub that connects both the video cards. This hub synchronises the signals—one scene is collectively rendered by two GPU's. Let's take a look at the cost-to-performance ratio in the present scenario for an SLI rig. The performance increase offered is about 1 to 1.5 times a single card of the same type does. However, the cost increases sharply, since you need to have two top-of-the-line 6800GTs or Ultras to implement this solution—and no, you cannot mix and match! Both cards must be identical in all respects, including memory, and manufactured by the same company.

You will also need to have an efficient cooling system to dissipate the heat that will be generated inside the cabinet by such a setup, not to mention an SMPS of more than 500 Watt to provide for each of the cards drawing power from the SMPS. SLI implementations haven't taken off in a big way because of various issues including buggy drivers. Nevertheless, once these issues are ironed out, SLI may turn out to be the wave of the future!

facturers. The core clock speeds have gone higher, bundled with an increase in the memory speeds from the previous generation and the type of memory used. The biggest addition though, has been the doubling of the pixel pipelines. From 8, it has gone on to 16.

This means that with each clock cycle, the GPU will be able to handle twice the number of pixels and render them on-screen. Given the increased clock and memory frequency of the GPU, a card can chomp through a mind-boggling number of pixels.

The current generation of ATi cards give an increase of more than 50 per cent over the previous generation of cards, in terms of memory bandwidth; while their fill rate (Mtexels) has actually doubled from the previous generation.

SLI has also reappeared on the horizon, and some privileged users actually have a system running SLI. Going by the power that the GPU is being blessed with, it will not come as a big surprise to one day see a video card being compared with the PC processor!

This particular category featured the cream of the current crop. From the X800 to the 6800GT, they all fit into this category. The top-of-the line, most wanted desktop graphic cards on the planet! It's a pity the 6800 Ultra and the Ultra Extreme could not make it to the comparison in time, but the 6800GT and the X800XT PE crowned the high-end category of the comparison.

Their Features

The privilege that high-end cards enjoy is money. For a user who wants to invest in such cards, money is never a concern. Performance is what counts. In addition, from the bundle of software that comes with the cards, it is more than evident that the manufacturers could not agree more.

The games and software bundled with each card is worth at least Rs 1,500, not to mention the extra cables and connectors.

XFX bundled three games with their 6800 GT, while Asus, as usual, bundled three games, a complete CD of game demos, DVD software, drivers, and their proprietary Media Show software. The PowerColor bundled the complete version of *Hitman: Contracts* with their X800 cards, and a multi-utilitarian bag that is a dream for any serious computer user—geek and gamer alike. Gainward was disappointing, and there wasn't much to their package—poor show in the features department.



Need for Speed Underground **on the Gainward GeForce FX 6800GT shines well as per image quality**

The rest of the cards also came with commendable packages, but none could match the Asus. Most of the cards had dual DVI connectors on the back panel, for which requisite cables were provided in the package.

The Gainward card looks humongous, with a dual-fan cooling design, and covers up the adjacent PCI slot. This card sucks in air from inside the cabinet and circulates it to efficiently cool the card. But for that, you need a good case with more than enough cooling.

Looking at a RAID setup that most gamers would have, the heat generated inside the system would probably be akin to that of a little furnace.

On the other hand, the XFX 6800 GT is a work of art. Single slot, no fuss, noiseless and sleek-looking. The top of the card is covered by a sleek metal plate,

Difference Between Shader Model 2.0 And 3.0

The new nVidia 6X series supports Shader model 3.0. What is Shader model 3.0? It is an improvisation over the old Shader Model 2.0 available in the last generation of cards which are the 5X series for nVidia and 95X series for ATi. In fact, ATi still haven't moved to Shader Model 3.0 in their current crop of cards, which is the X8X series.

Technically, Shader model 3.0 offers more in every department over Shader model 2.0.

Given below is a brief table of the improvements of SM3.0 over SM2.0.

We can see that there is hardly any image improvement from SM 2.0 to SM 3.0. For now, it seems that SM 3.0 will probably provide more of a performance gain in games than actual image quality. The variation in image quality can only be measured with the emergence of new games that will implement Shader model 3.0 instructions from scratch.

Pixel Shader Feature	Shader 2.0	Shader 3.0	Description
Shader length	96	65535+	Improvement in image quality
Dynamic branching	No	Yes	Improvement in performance
Shader anti-aliasing	Not supported	Built-in derivative instructions(Anti-aliasing support in game)	Improvement in image quality
Back-face register	No	Yes	Improvement in performance
Interpolated color format	8-bit integer minimum	32-bit floating point minimum	Improved colors leading to improvement in image quality
Multiple render targets	Optional	4 required	Improved visual quality without loss in performance
Fog and specular	8-bit fixed function minimum	Custom fp16-fp32 Shader program	More precise calculations leading to fog and specular lighting being directly controlled by the programmer
Texture coordinate count	8	10	Improvement in visual quality

Vertex Shader feature	Shader 2.0	Shader 3.0	Description
Shader length	256 Instructions	Shader 3.0	Improved visual quality
Dynamic branching	No	65535 instructions	Improved performance
Vertex texture	No	Yes	Improved visual quality
Instancing support	No	Any number of lookups from up to 4 textures Required	Improved performance

which, if you look from above, partitions the motherboard into two perfect halves!

Their Performance

The performance of the high-end cards was the highlight of the comparison. The Tier 1 tests were child's play for these cards. In the *Far Cry* test, the XFX 6800GT trounced the other cards with sheer authority.

It posted a record 138.57 fps at 1,024 x 768 with the game settings set to Medium. *Doom 3* and *Half-Life 2* fared similarly on this card, and we wondered if the manufacturer had hidden a steroid shot somewhere in the card's heat sink! The X800 PRO is relatively underpowered because of its 12-pixel pipeline architecture compared to the 16-pixel pipeline architecture of the 6800GT.

However, that does not mean that the card in any way lacks spunk. In 3DMark, the card posted the highest scores amongst all the other cards, even ahead of the X800XT PE.

Moving on from the Tier 1 tests, we had four distinct winners. These were the Gainward 6800 GT 256 MB, the Gainward 6800 256 MB, the XFX 6800GT 256 MB and the PowerColor X800 PRO.

In our Tier 2 tests, the in-game settings were turned to High as usual. Before we get into the results, let's talk a little about the textures in *Doom 3*. Any gamer who has played *Doom 3* will agree that it has fantastic lighting and that the textures are excellent. In *Doom 3*, at low quality, everything is toned down—lighting and textures—and all the maps are compressed, while all the textures are fixed to 512 x 512 with specular maps fixed to 64 x 64. Anyone with a decent 64 MB video card can play in the low quality mode with relatively good frame-rates.

But as we move on to the High settings, the specular and diffuse maps are compressed using DXTC 1, 3, 5, while the normal maps are uncompressed. In addition, the texture sizes are not fixed.

This puts a major load on the GPU, and the DDR3 RAM on the high-end cards helps in this area since the faster speed lets it load the textures faster.

In the Ultra quality mode, everything is uncompressed, and here the texture data can go above 500 MB, making it suitable for video cards of the future which will feature 512 MB of video RAM. We did try the Ultra High quality on the XFX 6800GT and the Gainward 6800GT.

What we saw was utterly unbelievable! No game has ever looked so good. Everything seemed to jump out of the screen, and given the sound effects, it was truly a visual and aural treat to experience.

Half-Life 2 is a relatively less hungry for resources, and so even when you move on to high quality, the frame-rates dip, but not massively. The game is more about the physics and the engine rather than heavy textures. One place the game stands out is the water. It is amazing and this is where the pixel shaders of the card have to work. The shader-intensive water was quite a match for even the best video card we had.

In *Far Cry* though, effects abound. You name it and, the game has it, in order to look good.

Contact Sheet

Brand	Company	Telephone	E-mail	Web-site
Asus	ASUSTeK Computer Inc	022-56490048	info_india@asus.com.tw	www.asus.com
Club3D	Prime ABGB Pvt. Ltd	022-23885500	primeservices@vsnl.com	www.club-3d.com
Gainward	Mediatech India	022-26361111	digit@mediatechindia.com	www.gainward.com
Gigabyte	Digi Giga System Ltd	022-26526696	sales@digigiga.co.in	www.giga-byte.com
Maxforce	Maxtone Electronics	022-23091664	maxtone@vsnl.com	www.maxtone.com
MSI	Cyberstar	022-28386711	navin@cyberstarindia.com	www.msi.com.tw
PNY	Access	022-23840789	accessinfoworld@vsnl.com	www.pny.com
PowerColor	Mediatech India	022-26361111	digit@mediatechindia.com	www.powercolor.com.tw
XFX	Rashi Peripherals	022-28260258	navinderc@rptechindia.com	www.xfxforce.co.uk

Score Board — DirectX 9 AGP cards

Brand	Model	Basic Specifications	Score (Out of 100) Tier 1	Tier 2	Price (Rs)
		Budget Category			
Gigabyte	Geforce FX 5200	128 MB, Memory Bandwidth 3.2 GB/s compatibility DirectX 9/OpenGL 1.4	61.99	NR	4500
MSI	Geforce FX 5200 T-128	128 MB, Memory Bandwidth 10.6 GB/s compatibility DirectX 9/OpenGL 1.4	48.52	NR	4500
MSI	Geforce FX 5200 TD-128	128 MB, Memory Bandwidth 10.6 GB/s compatibility DirectX 9/OpenGL 1.4	60.10	NR	5000
PNY	Geforce FX 5200	128 MB, Memory Bandwidth 6.4 GB/s compatibility DirectX 9/OpenGL 1.4	55.98	NR	3750
XFX	Geforce FX 5200	64 MB, Memory Bandwidth 6.4 GB/s compatibility DirectX 9/OpenGL 1.4	64.28	NR	5355
XFX	Geforce FX 5200 Personal cinema	128 MB, Memory Bandwidth 6.4 GB/s compatibility DirectX 9/OpenGL 1.4	57.02	NR	11655
XFX	Geforce FX 5200	128 MB, Memory Bandwidth 6.4 GB/s compatibility DirectX 9/OpenGL 1.4	55.30	NR	4320
XFX	Geforce FX 5200	256 MB, Memory Bandwidth 10.6 GB/s compatibility DirectX 9/OpenGL 1.4	68.23	NR	6210
		Performance Low			
ASUS	Radeon 9550	128 MB, Memory Bandwidth 6.4 GB/s compatibility DirectX 9/OpenGL 1.5	51.91	NR	5490
ASUS	Geforce FX 5700	128 MB, Memory Bandwidth 8.0 GB/s compatibility DirectX 9/OpenGL 1.5	48.43	NR	8150
Club3D	Radeon 9600XT	256 MB, Memory Bandwidth 9.6 GB/s compatibility DirectX 9/OpenGL 1.5	59.29	NR	11000
Club3D	Radeon 9600Pro	128 MB, Memory Bandwidth 9.6 GB/s compatibility DirectX 9/OpenGL 1.5	61.79	NR	9000
Gigabyte	Radeon 9550	128 MB, Memory Bandwidth 6.4 GB/s compatibility DirectX 9/OpenGL 1.5	46.48	NR	4500
Gigabyte	Radeon 9600Pro	128 MB, Memory Bandwidth 9.6 GB/s compatibility DirectX 9/OpenGL 1.5	55.39	NR	14500
Gigabyte	Geforce FX 5700LE	128 MB, Memory Bandwidth 6.4 GB/s compatibility DirectX 9/OpenGL 1.5	67.78	67.94	12000
Gigabyte	Geforce FX 5700	128 MB, Memory Bandwidth 6.4 GB/s compatibility DirectX 9/OpenGL 1.5	71.53	70.77	12500
Max force	Radeon 9600XT Bravo	128 MB, Memory Bandwidth 9.6 GB/s compatibility DirectX 9/OpenGL 1.5	54.82	NR	5500
MSI	Geforce FX 5700	128 MB, Memory Bandwidth 14.4 GB/s compatibility DirectX 9/OpenGL 1.5	52.39	NR	7800
MSI	Radeon 9550SE	128 MB, Memory Bandwidth 6.4 GB/s compatibility DirectX 9/OpenGL 1.5	42.20	NR	5500
PowerColor	Radeon 9600XT Bravo	128 MB, Memory Bandwidth 9.6 GB/s compatibility DirectX 9/OpenGL 1.5	73.70	64.17	10995
XFX	Geforce 5700Ultra	128 MB, Memory Bandwidth 16.0 GB/s compatibility DirectX 9/OpenGL 1.5	61.92	77.73	13500
XFX	Geforce 5700LE	128 MB, Memory Bandwidth 14.4 GB/s compatibility DirectX 9/OpenGL 1.5	54.19	NR	6660
XFX	Geforce 5700LE	256 MB, Memory Bandwidth 14.4 GB/s compatibility DirectX 9/OpenGL 1.5	57.78	NR	8775
		Performance Mid			
Club3D	Radeon 9800Pro	128 MB, Memory Bandwidth 21.8 GB/s compatibility DirectX 9/OpenGL 2.0	73.23	66.97	15500
Gainward	Geforce FX 5900XT	128 MB, Memory Bandwidth 22.4 GB/s compatibility DirectX 9/OpenGL 1.5	73.78	79.40	13750
PowerColor	Radeon 9800Pro	128 MB, Memory Bandwidth 21.8 GB/s compatibility DirectX 9/OpenGL 2.0	72.55	NR	13475
		Performance High			
ASUS	Radeon X800XT	256 MB, Memory Bandwidth 35.8 GB/s compatibility DirectX 9/OpenGL 2.0	67.49	NR	41750
ASUS	Geforce FX 6800	256 MB, Memory Bandwidth 22.4 GB/s compatibility DirectX 9/OpenGL 1.5	58.08	NR	32820
Gainward	Geforce FX 6800GT	256 MB, Memory Bandwidth 32 GB/s compatibility DirectX 9/OpenGL 1.5	73.61	69.88	26995
Gainward	Geforce FX 6800	128 MB, Memory Bandwidth 22.4 GB/s compatibility DirectX 9/OpenGL 1.5	75.62	58.44	19950
PowerColor	Radeon X800Pro	256 MB, Memory Bandwidth 28.8 GB/s compatibility DirectX 9/OpenGL 2.0	70.1	61.95	27995
PowerColor	Radeon X800XT	256 MB, Memory Bandwidth 35.8 GB/s compatibility DirectX 9/OpenGL 2.0	69.97	NR	32500
XFX	Geforce FX 6800GT	256 MB, Memory Bandwidth 32 GB/s compatibility DirectX 9/OpenGL 1.5	75.71	60.9	34999

For the entire scoreboard, log on to www.thinkdigit.com, Note: NR = Not Run

In the research time demo, you can check the detail of the textures with utmost ease (which are uncompressed, again) and the light that reflects off them. When the action takes place, you can feel the game lag when all the settings are set to very high.

With this said, let us see how our cards fared. The Powercolor X800 PRO stole the show in 3DMark 2005, but the tests here were done using Pixel and Vertex Shaders 2.0. For the Gainward and the XFX 6800 GTs, it used shader model 3.0, as that was the default selection of the games. Thus, for any future games that will utilise PS and VS 3.0, the X800 will not be a suitable proposition. However, it was not good enough for the Gainward. In our *Doom 3* tests, the X800 PRO suffered, but regained its composure in the other tests. In *Far Cry* and *Half-Life 2*, the Gainward reigned supreme. We also tested *Need For Speed Underground 2* to take image quality shots along with *Doom 3* and *Half-Life 2*. The Gainward GeForce 6800 GT kicked butt, posted extremely good figures across all the tests, and was the ultimate winner in our high-end category.

The Winners Are...

That the competition was tough would be an understatement. It was more neck-to-neck than anything else. The XFX 6800GT performed commendably, but it could never come close to the Gainward in terms of either price or performance, and bowed out with grace. The Gainward 6800GT 256 MB video card is one card that anybody would want to possess. It not only gave terrific frame-rates, but also hit the sweet spot with its price. It is unquestionably the winner of our Performance High Category and gets the Digit Best Buy Gold Award. The X800 PRO gave good results, though they were just not enough for the first spot. Nevertheless, it did make it to second spot, and the PowerColor Radeon X800 PRO gets the Digit Best Buy Silver Award for the high-end AGP category. ⊠

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Powercolor Radeon X800 Pro



Gainward Geforce FX 6800GT

Designer Pointer

This underwhelming mouse from Microsoft was designed by Frenchman Philippe Starck. Thankfully, it is not underwhelming to the point of being boring or unappealing. A strait divides the top of the mouse into two halves, which act as either buttons. The strait, in turn, is illuminated with a blue light that contrasts well with the sliver body of the mouse.



Starck is an optical mouse and is quite nimble on a surface, gliding smoothly as if defying the laws of gravity. The clicking action is a little too sensitive, though—our only major gripe with this device.

At Rs 1,876 this designer mouse should go down well with executives but gamers may give it a no-go.

Company **Microsoft Corporation India Pvt Ltd**
Price **Rs 1,876**
Phone **011-26294600**
E-mail **connect@microsoft.com**
Web site **www.microsoft.com**

Rating 1 2 3 4 5

PowerDisk MP3 Watch

Watch This



And now, a regular-looking wrist watch that can play MP3s. Seriously! The PowerDisk MP3 wrist watch looks like a chunky piece of time wear complete with big buttons and all. What this really has is the ability to play MP3s. With a capacity of 128 MB, you can store about 20 to 25 of your favourite tracks using the supplied retractable USB cable. The device is recognised as plug-and-play by Windows XP and can also be used for data storage. Obviously, the feature set and playback options are limited as compared to a full-fledged MP3 player. We got about 9.5 hours of continuous playtime on a fully charged battery. Audio quality, though not the best, is surprisingly decent.

Company **Max Infosolutions**
Price **Rs 7500 for MP-1686-08066-2B (128MB), Rs 5600 for MB-1386B (128MB), Rs 9000 for MP-1686-07220-A (256MB)**
Phone **022-55974224**
E-mail **info@maxinfosolutions.com**

Rating 1 2 3 4 5

New&Notable

Motorola MPx200

Unlike other PDA phones from Sony Ericsson or Palm, the MPx200 from Motorola is rather slim and does not employ touch-screen for data input. This smart cell phone, when combined with Microsoft's Windows Mobile 2002 OS, offers easy one-handed operation. The sturdy build and lustrous satin black body are attractive, but fingerprint imprints are unavoidable. The 65K colour LCD is amongst the best we have seen. A monochrome sub-LCD up front displays basic information like time, date and caller ID. Features, though, is where this phone may fall short of enticing consumers. With no camera, Bluetooth or even FM radio, the Rs 16,500 price tag seems steep. You do get a SD/MMC slot, IR and a USB cable as the syncing apparatus. Performance is normally peppy, although short bursts of sluggishness do creep in ever so often.

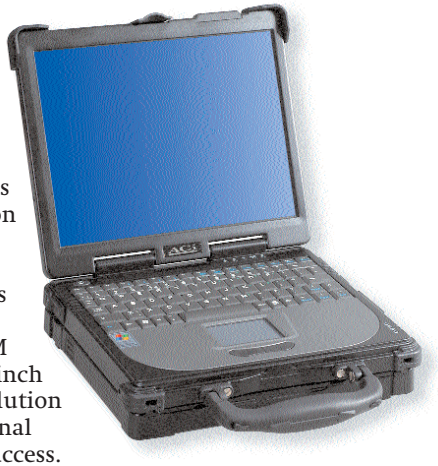


Company **Esource Global**
Price **Rs 16,500**
Phone **022- 55021620**
E-mail **sales@esourceglobal.com**
Web site **www.motorola.com**

Rating 1 2 3 4 5

ACi Commando

Tough Nut



The Commando from ACi is a rugged notebook made of die-cast magnesium alloy. However, the tough construction does add extra weight to the notebook, which is further increased by the addition of a docking station offering extra I/O ports, a floppy and a combo drive. The hardware runs on an Intel Pentium M 1.1 GHz processor with 256MB DDR RAM and a 40 GB hard drive. Its 12.1-inch TFT screen runs at a native resolution of 1024x768. It also has an internal 802.11b Wi-Fi card for wireless access.

Under our multimedia-rich battery test, the laptop ran for 3 hours and 55 minutes, it will last longer under normal usage. A long battery life is always desirable in a mobile device.

The Commando is certainly a good buy for those looking for a laptop to be used under harsh conditions where it might be prone to mechanical shocks.

Company **Allied Computer International (Asia) Pvt ltd**
Price **Rs 1,50,000**
Phone **022-56407000**
E-mail **support@aci-asia.com**
Web site **www.aci-asia.com**

Rating 1 2 3 4 5

ATi Radeon X850

Graphic Details!

The Radeon X850XT Platinum Edition 256 MB card is ATi's top-of-the-line card. Based around the R480 GPU, it uses 130nm manufacturing process to obtain higher clock speeds. This is probably the first ATi card to employ a two-slot cooling system. The leaf blower fans, first seen on the nVidia cards, do a good job on the Radeon as well.

We tested the card on the Intel D925XCV motherboard with 1 GB of DDR II 533 MHz memory, 250 GB Maxtor and Windows XP and the latest updates and patches. We used the latest 4.12 catalyst drivers.

X850XT PE Specifications	
Core clock	540
Pixel fill-rate	8.6G pixels/sec
Texture fill-rate	8.6G extures/sec
Memory Speed	590MHz GDDR3
Onboard Memory	256MB

Scores At 1600 x 1200	
Call Of Duty	202
Doom 3	47
Half-Life 2	48.35
Far Cry	57.9
Halo	55.49
3DMark 2005	5540

The card, as expected, performed superbly posting some of the best scores we have ever seen. In 3D Mark05, the X850XT PE logged an amazing 5540, the best ever by any card. Below a resolution of 1600x1200, the card becomes CPU-bound and a lot depends on your CPU speed.



To avoid this, we ran our benchmarks at a resolution of 1600x1200.

We ran Doom3, Half-Life 2, Far Cry and Halo benchmarks and the card came through with flying colours on all counts. One point to note here is that Doom3 prefers nVidia cards and hence, cards based on 6800 Ultra do better than ATi ones, however, the reverse is true for ATi when it comes to Half-Life 2. Which brings us to the million dollar question: Which card should you buy? That would depend on which game engine developers prefer—Doom3 or Half-Life 2.

Enough of benchmarking, we also put the card to a real world test and played all these and many more games with pumped up effects. The games play was smooth, effects awesome and not once did the fan blower raise its decibel to exert grievances! But as with all high-end cards, availability may be an issue.

Company **ATi**
Price **NA**
Phone **NA**
E-mail **NA**
Web site **www.ati.com**

Rating 1 2 3 4 5

ScanSoft PDF Converter Pro 2

Convert Anything!

This software converts web pages, Word documents, Excel sheets and PowerPoint files into PDF and PDF files back into Word documents. It allows you to convert files in multiple formats at the same time into a PDF file each or merge them as a single PDF file.

The software has a fairly simple interface and a comprehensive list of options. You do need Microsoft PowerPoint, Word and Excel installed on your machine, though, or else, an 'unrecognised file format' error follows. You can choose to convert all or selected pages, size your own page, resolution, scale, colour scheme and more.

When converting to PDF, there is no feature that lets you allow the software to choose the appropriate size so that all the content fits into the PDF page. You must set the size by trial and error as with an incorrect page size the format and layout of the pages goes awry.

PDF to Word was smooth with minimal misalignment which was easily correctable.

The software didn't work too well with Excel and PowerPoint, although it did perform admirably in the Word-PDF and vice-versa conversions.



Company **ScanSoft International**
Price **Rs 5,995**
Phone **011-26207477**
E-mail **sameer.dania@scansoft.com**
Web site **www.scansoft.com**

Rating 1 2 3 4 5

Looking for more information on any of the products featured in New & Notable?

Please write to products@thinkdigit.com. The DIgit Test Centre will be delighted to respond to your queries.

Travel PAC 3-in-1 USB Mobile Charger

This neat little gadget from Travel PAC promises to put to rest all the low battery jitters with your mobile phone. You can charge Nokia and Sony Ericsson phones using the device straight from the USB port on your desktop or notebook computer. It comes with a USB cable which has an adapter at one end and a Nokia/Sony Ericsson plug at the other. A thoughtful addition is a cigarette lighter adapter for charging in your car and an AC plug in case you want to use standard power sockets. The USB connects to these devices to draw power as well.



In our tests, we could even charge the Nokia 2280, a device not on the compatibility sheet. If only it was compatible with other cell phones, what with Samsung and LG making their presence felt in the market. It is slightly expensive at Rs 905, but the convenience is worth it. A very useful tool for all the frequent travellers!

Company **Camac Holdings**
Price **Rs 905**
Phone **033-22207961**
E-mail **camac11@vsnl.net**
Web site **http://www.pac.com.sg**

Rating 1 2 3 4 5

1 **Poor:** Has serious drawbacks and needs improvement before it can be used for its target application. 2 **Mediocre:** Does not live up to expectations, needs improvement in many areas. 3 **Average:** Reasonably competent but nothing spectacular about the product. 4 **Good:** A good buy, better than most products in its category. 5 **Excellent:** A brilliant combination of price, performance and features—far beyond expectations.

TECH NIGHTMARES

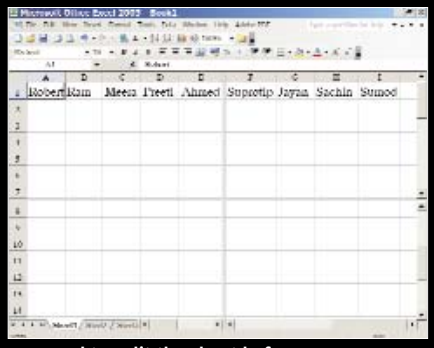
Microsoft Excel

Yes, we know Excel can be annoying. Here's how you can fix a few problem zones

1. Excel Freezes Columns While Freezing Rows

You have probably encountered this. Let's say your first row contains names, and you want to freeze the pane so the names are always displayed. You put the cursor at cell A1, and freeze the pane. What happens? Instead of just the first row freezing, some columns get frozen as well. What do you do?

Solution: Let's assume you need to freeze the top row, which contains, say, names. First, freeze the panes while at cell A1 by going to Window > Freeze Panes. Now, go to Window > Split. This will split the sheet into four blocks. Go to the centre of the split, so that the four-pronged cursor shows. Drag it up to the bottom of the row you want to freeze, and drag it also to the left, all the way, beyond the first column. Now, freeze panes again by going to Window > Freeze Panes. You are done!



You need to split the sheet before you can properly freeze panes

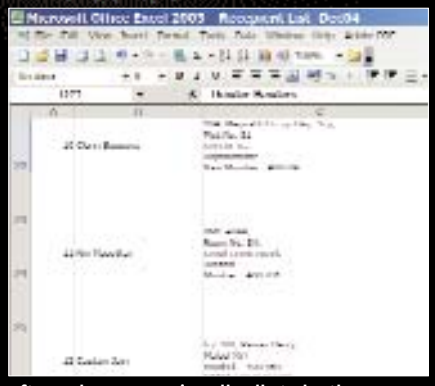
2. All Cells Are Sized Differently

Say you have a mixed workbook—one column contains five-line addresses, one contains single-line numbers, and so on. You will have cells of various sizes. It doesn't look pretty. When you highlight a cell that has a lot of text, the contents show up from the formula bar in a yellow box, obscuring everything underneath it.

Solution: Here's how you change all the cells in a range to be the same size. Say you are doing it row-wise. You will want to adjust the height of the columns in this case. Place the cursor on a particular row number: the cursor should change to a horizontal arrow. Now drag the cursor down to cover the range you need. Then, place the cursor on a row boundary to the left of the cells and stretch it to the height you want the columns to be. All cells you selected will now be of the same height.



Before: The text boxes are all different sizes, and scrolling is clumsy



After: When you resize all cells to be the same size, it looks nicer, and scrolling feels better

3. The Annoying "Getting Started" Pane

When you start Excel 2003, what you get instead of a nice blank sheet is the sheet on the left, with the "Getting Started" pane on the right. All along, you have just been closing it after starting Excel. Besides, you probably don't need it.

Solution: To prevent the Task Pane from popping up, go to Tools> Options, and select the View tab. Un-tick "Startup Task Pane." That should do it. If it doesn't, open the registry editor. Navigate to this key: HKEY_CURRENT_USER\Software\Microsoft\Office\11.0\Common\General. Right-click the "DoNotDismissFileNewTaskPane" key, and then click Delete. Click OK to confirm that you want to delete the key. This should prevent the Task Pane from popping up, if the first method didn't work.

4. Credit Card Numbers Show Up Chopped Off At The End

You would have encountered this if you have worked with credit card numbers: you enter a number such as "5458004513024384", and it shows up as "5458004513024380"—with the last digit changed to a zero. It might even have happened without your noticing it, and you might be dealing with wrong data! The reason this happens is that Excel cannot handle integers more than 15 digits long.

Solution: To fix the problem, either append an apostrophe before the card number to mark it as text, or manually format the cells as text.

5. Numbers And Dates Go Awry

In some instances, you might find that when you copy a range of dates from one workbook and paste them onto another, all the dates are off by four years—for example, "10/12/2004" becomes "10/12/2008". Another irritating thing about dates is that when you subtract one date from another to find the number of days between them, the result shows up as a date that you do not recognise.

In some instances, when you type a number, for example, "23", it becomes "0.23" even if you have formatted the cell without decimals.

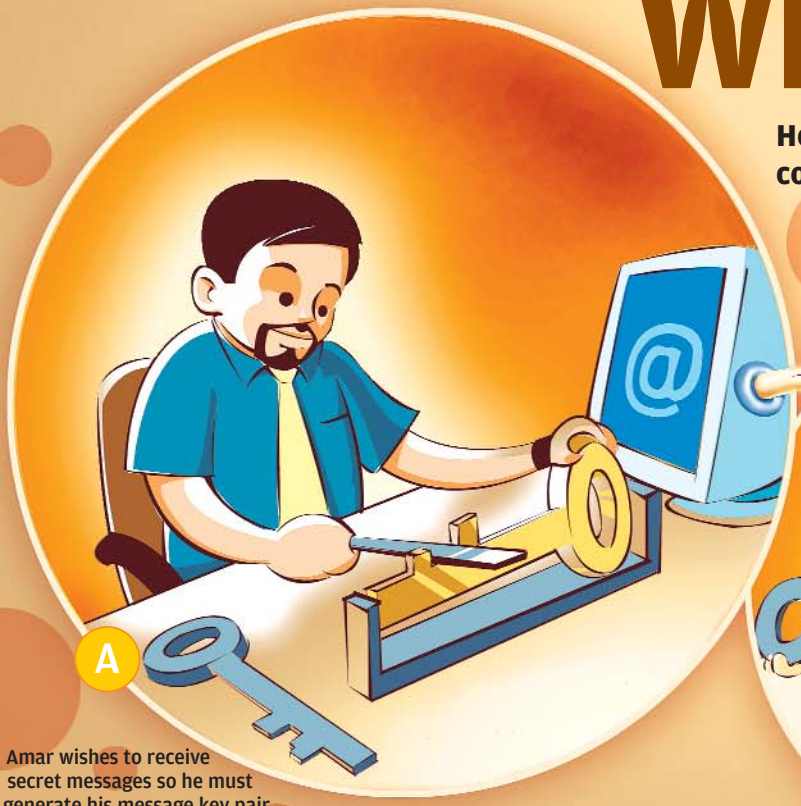
Solution: To fix the four-year date problem, go to Tools > Options, then click the "Calculation" tab. Make sure the "1904 date system" box is un-ticked. To make the results of date calculations appear correctly, you'll need to manually format the result cell as a number.

For the latter problem, go to Tools > Options, and in the "Edit" tab, un-tick "Fixed decimals". ■

ram_mohan@thinkdigit.com

Write It,

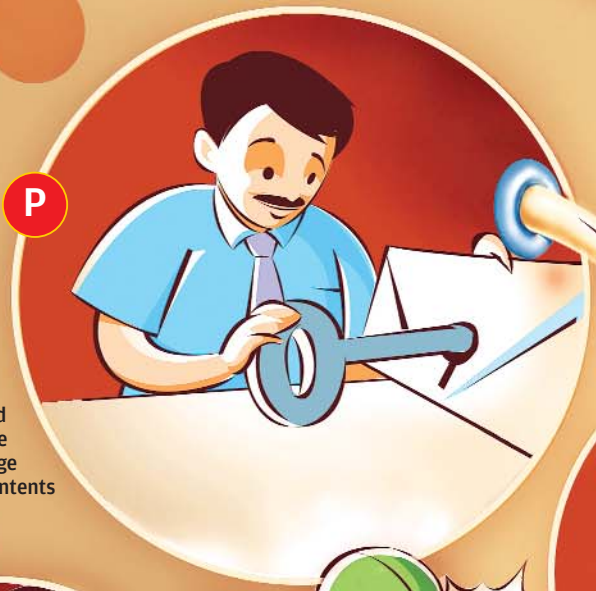
Here's how those super-confidential e-mails are sent





A Amar wishes to receive secret messages so he must generate his message key pair. This pair has a unique property—a message locked with one key can only be unlocked by the other matched key. The same key cannot be used to lock as well as unlock the secret message. One key (Grey) is his 'Public Key', that he must share with the whole world, while the other (Golden) key is his 'Private Key' that he must keep secret and give to no one.

B Amar distributes his 'Public Key' by attaching it to email he sends, or on his personal web site, or with a 'Public Key' directory that anyone can look up. They could be Amar's friends or spies who snoop on all the messages he receives.



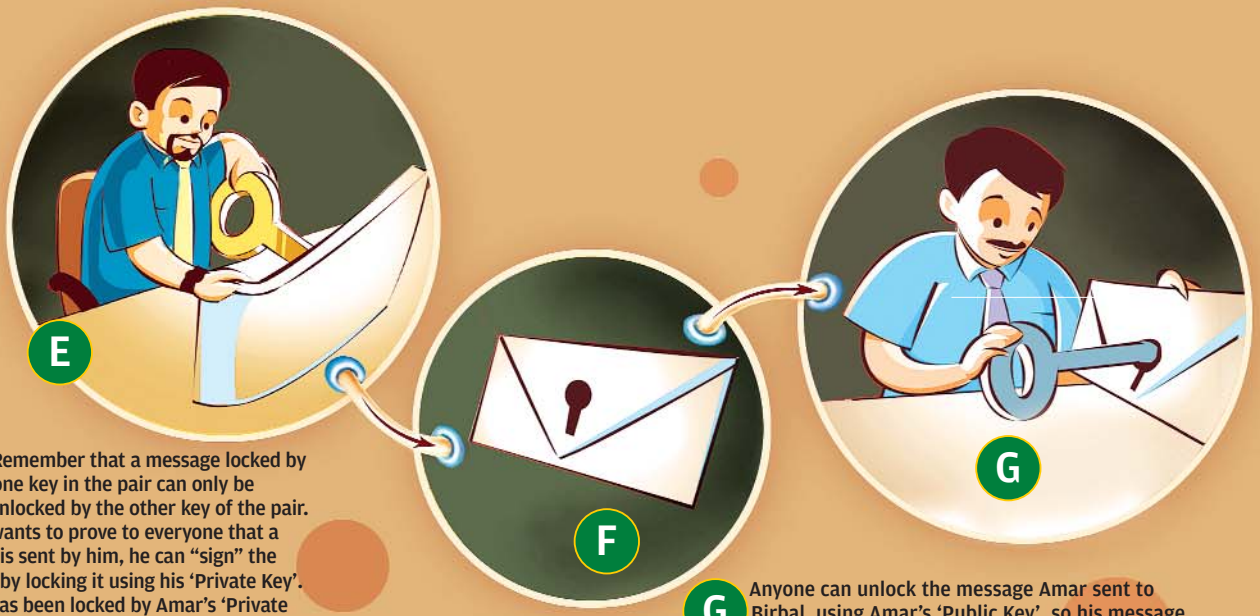
P When Amar's colleague Birbal wants to send Amar a secret message, he locks (encrypts) the message using Amar's 'Public Key'. Now the message can be unlocked only using Amar's private key. He sends the message like any other but the contents look like garbage.





X A Spy is tapping Amar's Internet connection and makes a copy of the message Birbal sends to Amar. The message is encrypted so the Spy tries to use Amar's 'Public Key' to unlock it. But he fails. Once a message is locked with one key, it can only be unlocked by the other key in the pair!

Encrypt It, Send It



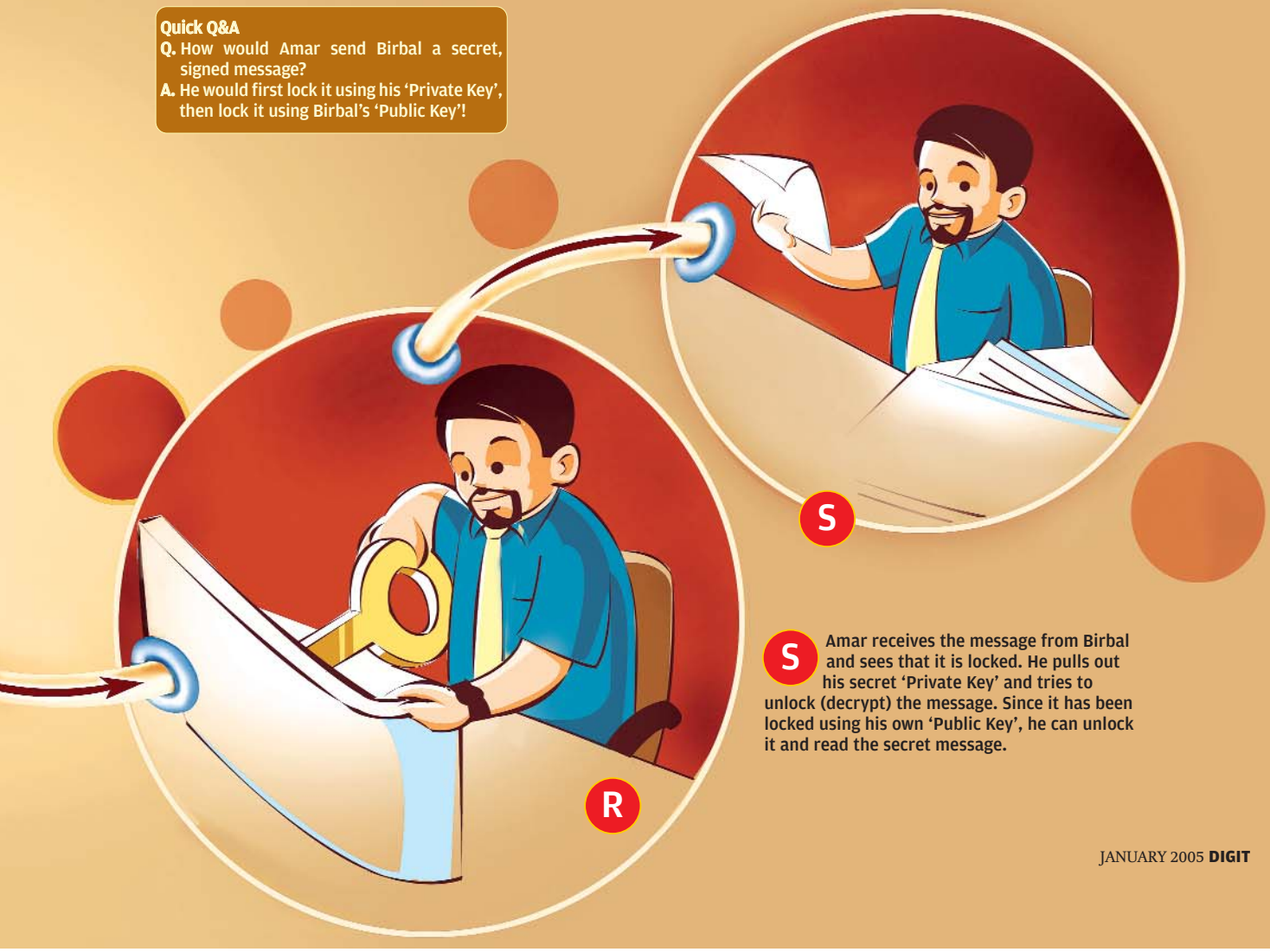
E Remember that a message locked by one key in the pair can only be unlocked by the other key of the pair. If Amar wants to prove to everyone that a message is sent by him, he can "sign" the message by locking it using his 'Private Key'. Since it has been locked by Amar's 'Private Key', it can now only be unlocked by his 'Public Key'.

G Anyone can unlock the message Amar sent to Birbal, using Amar's 'Public Key', so his message is not secret. But because the message can be unlocked only by Amar's 'Public Key', it proves to everyone that it has been locked by Amar's 'Private Key'. Since only Amar has his 'Private Key', he must have sent the message!

Quick Q&A

Q. How would Amar send Birbal a secret, signed message?

A. He would first lock it using his 'Private Key', then lock it using Birbal's 'Public Key'!

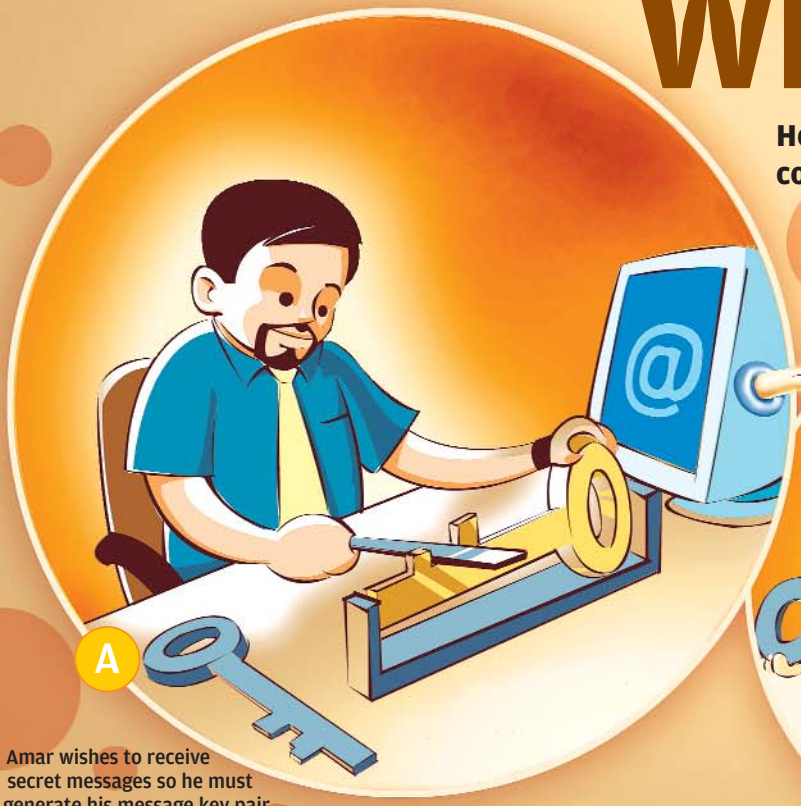


S Amar receives the message from Birbal and sees that it is locked. He pulls out his secret 'Private Key' and tries to unlock (decrypt) the message. Since it has been locked using his own 'Public Key', he can unlock it and read the secret message.

Infographic Shyam Shriram
Text Sumod Hajela

Write It,

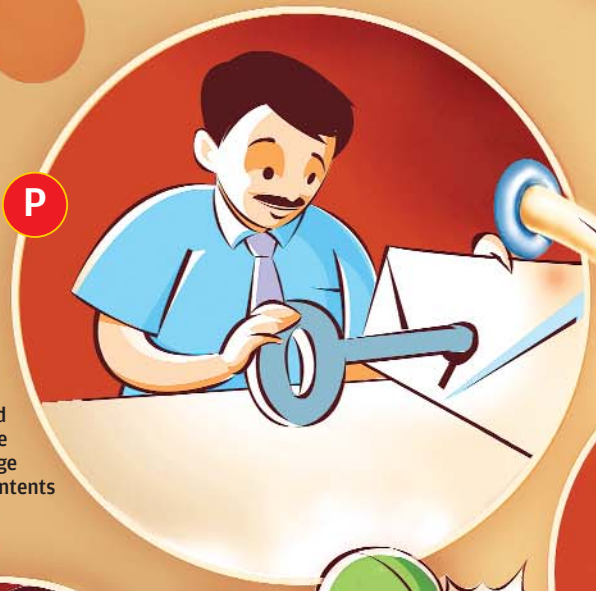
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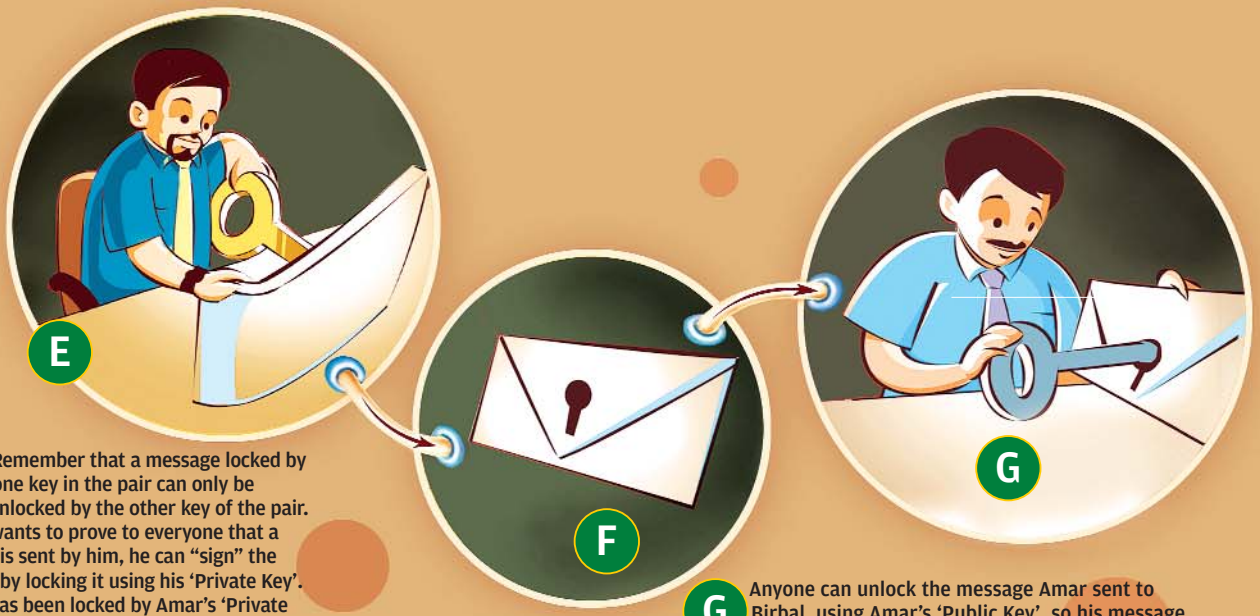
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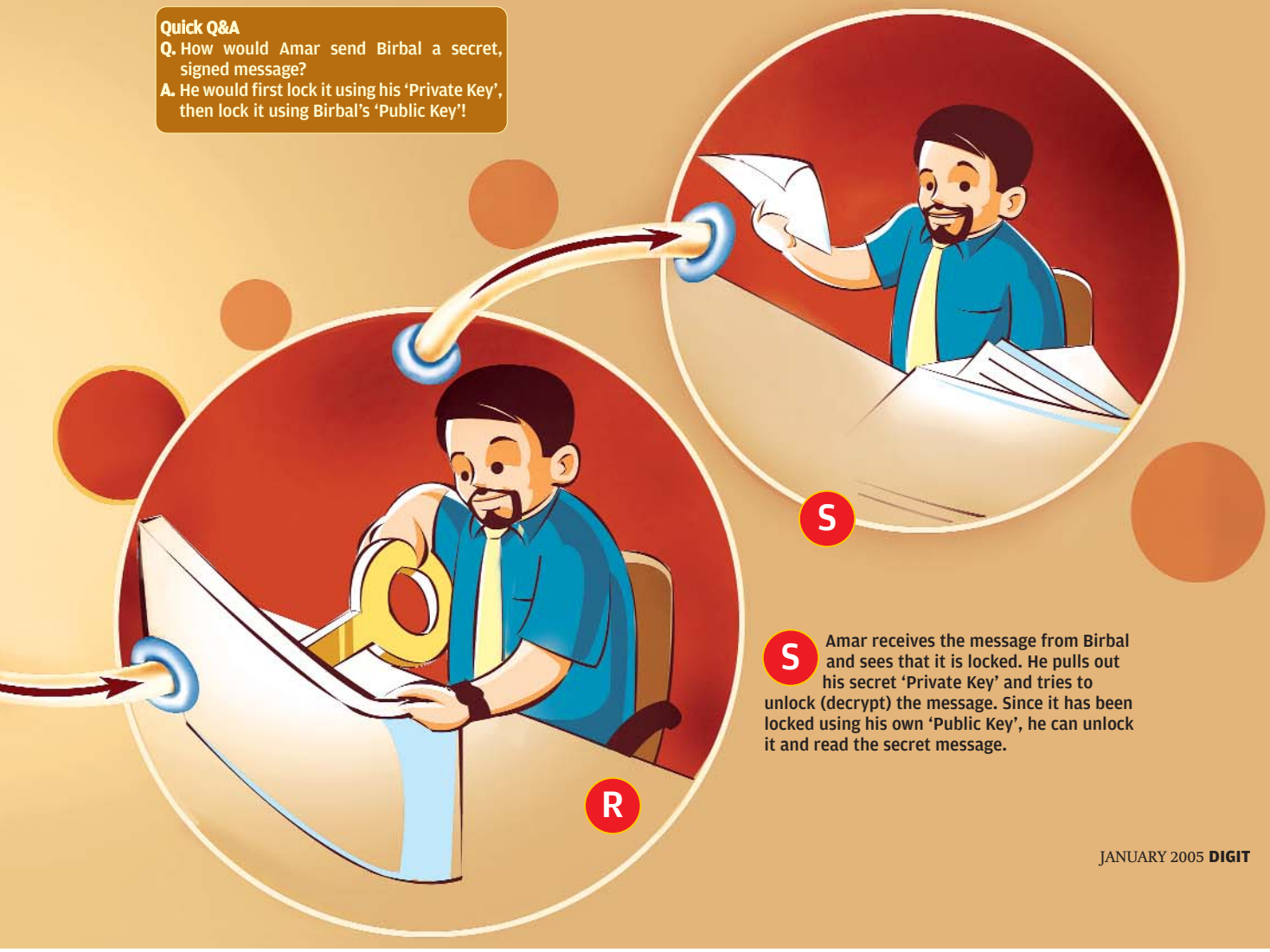
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Infographic Shyam Shriram
Text Sumod Hajela

IMDb.com

From box-office earnings of The Incredibles to trivia on Star Wars, this site has just about everything related to movies

Sachin Kalbag

In the Sergio Leone-directed classic western The Good, The Bad and The Ugly, veteran actor Wli Wallach as Tuco says: "When you have to shoot, shoot. Don't talk."

That was in 1966. It has been an oft-repeated line in movies since. But it is also, perhaps, the philosophy that IMDb.com follows. If you are on to something, go the whole hog, or as Bruce Willis would say, go the Whole Nine Yards. Or don't do anything at all.

IMDb.com (short for Internet Movie Database), therefore, has a collection of just about every Hollywood movie ever released. It doesn't just talk; it delivers.

It has more than 6.3 million entries, making it, as the site itself claims, "Earth's biggest movie database." At last count, it had details on 4.23 lakh movies, 1.64 million people (including actors, directors, producers, cameramen, set decorators, make-up men, etc), 14,000 trailers, 4.1 million recommendations. Actually, the list could go on.



IMDb's home page has all you need to get started



Search for "Mother India" and see what IMDb comes up with

Find Everything

IMDb is not just about movie titles, or even people. It can search, apart from titles and people, quotes from movies, biographies, film plots and characters from movies. The fun is in searching for the most obscure part of a movie, or even obscure movies related to a certain well-known film.

For instance, type "Mother India" in the search field, and you will not only get the Nargis-Rajendra Kumar-Sunil Dutt classic from 1957, but also *Bharat Mata* from 1932; a reference to the epithet of Mother India for former Prime Minister Indira Gandhi on whom several movies and television series were made; and all the movies and TV series that Indira Gandhi featured in as herself.

Search for the popular Star Wars character "Luke Skywalker" in "Characters," and you will get a complete list of movies and television shows in which the name features, in addition to all the actors that have ever played the character. A film enthusiast could not ask for more.



IMDb Pro is Rs 585 a month, but worth it if you need the info

Great Links, Small Packages, Interactivity

God, after all, is in the detail. With the latest news, DVD releases, trailers of upcoming movies, box-office reports, photo galleries (with updated pictures, we must add!), a star birthday corner, translated sites in Spanish, Italian and German, a trivia of the day, a movie quote, and a compilation of links to the latest movie features from some of the leading Web sites of the world.

In a way, IMDb.com is perhaps the most democratic of all movie sites. It lets the user decide which is a great movie and which is not. More often than not, users—by virtue of being true movie buffs—do not prank around; they give an honest opinion. Therefore, a rating on IMDb.com is as close to the real rating as anyone would give.

This brings us to the IMDb.com Top 250 films of all time.

The Top 250...

Based on user feedback and voting by its readers, IMDb.com automatically updates the top 250 movies of all time. You have to register in order to be able to vote, and the ratings are derived out of a relatively simple, yet mostly fool-proof statistical formula. This results in really great movies making it to the top 250. For instance, the current No 1 is *The Godfather* with over one lakh votes. Other favourites in the top 10 include *Casablanca*, *Schindler's List*, *The Shawshank Redemption*, and the *Star Wars* series.

...And The Bottom 100

Not ones to miss out on a little bit of fun, IMDb puts a little bit of twist to the Top Movies formula. And so, we reach the Bottom 100 list, led by *SuperBabies: Baby Geniuses 2*. Other movies in this elite list include Arnold Schwarzenegger's debut film *Hercules in New York*, a few parts of the *Police Academy* series, and even the sequel to the classic *Grease*.

IMDb Pro

While movie enthusiasts can drool over the sheer amount of information the site has, movie professionals have a corner exclusively to themselves. It is paid, though ($12.95 or Rs 585 per month), and provides representation listings of over 50,000 people in Hollywood and movie studios across the world; in-production charts of over 1,500 current movies; international box-office charts for students of financial aspects of cinema; a search feature to generate customised reports for corporate presentations; and a calendar of all the film festivals across the world. ■

sachin_kalbag@thinkdigit.com

Tips & Tricks

SECRETS THAT KEEP YOU AHEAD IN THE RACE

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Video Editing

As a follow up to the December 2004 'Tips and Tricks' on audio editing, this month, we look at video editing.

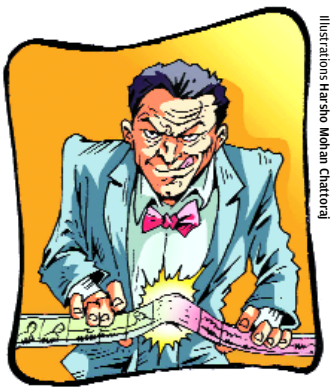
One of the most popular video editing software available is Adobe Premiere Pro. A tryout version (30 days trial) of this is available in *Digit's* December 2004 DVD. VirtualDub is another option you could try. It's small, fast, and best of all, free! This freeware tool is popular and works well for basic requirements and can be found at www.vitrualdub.org, or on the December 2004 *Digit* DVD and CD. VirtualDub also has many independent developers making plug-ins for it. For now, though, we will stick to Premiere Pro.

Once you get past the basics and are conversant with the software's interface, you will realise that basic editing is as easy as it can be. This article aims only to get you started on your video editing journey–even if we wrote a hundred pages of tips and tricks on video editing, we couldn't cover all the features. The tips and tricks mentioned here will range from the basic to the intermediate level.

Hopefully, once you are done reading this article, you will not be intimidated by the jargon, menus and myriad options that Premiere Pro throws at you.

Importing Files

The first thing you need to know is how to import files into Premiere Pro. Apart from standard video files (such as WMV, AVI and MOV files), you can also import images (BMP, JPG, GIF, EPS, PNG, PCT, TIFF, etc.), audio (MP3, WMA, AIF, etc.) and other formats such as layered PSD files and Adobe Illustrator art. If you are looking to import many files, just place them all in one folder and simply import the folder.



Illustrations Harsho Mohan Chattoraj

For starters, create a new project by going to File > New. Now you can select the type of output you desire in the box that pops up and click OK. A new project will open and you can now import your audio and video clips into it. To do this, go to File > Import, or press [Ctrl] + [I]. Use the 'Import Folder' option, if you need to import a folder containing audio and video clips.

Understanding The Interface

Before you start editing, you need to understand what all the different panes are and what they are used for. The screenshot below points out the various panes.

The Project pane: This is the pane where all files you import are displayed. Here, you can preview the clips and drag and position them in the 'Timeline Pane'.

The Monitor pane: This pane shows you a clip, your entire video sequence and add effects to them.

The Timeline pane: In this pane, you can place your audio and video clips, and edit them. You can cut clips and join them to other clips using this pane.

The Info pane: Here you see information about the selected clips.

The History pane: Information about all completed tasks is shown in this pane. You can use this



The Project pane: This is the pane where all files you import are displayed

The Monitor pane: Here you can view a clip, your entire video sequence and add effects to them

The Timeline pane: In this pane, you place your audio and video clips, and edit them. You can cut clips and join them with other clips using this pane

The Info pane: Here you see information about the selected clips

The History pane: Here you see all the tasks you have completed. Use the History pane to make revisions and iron out mistakes

pane to undo and step backwards in the editing process to exactly where you made a mistake!

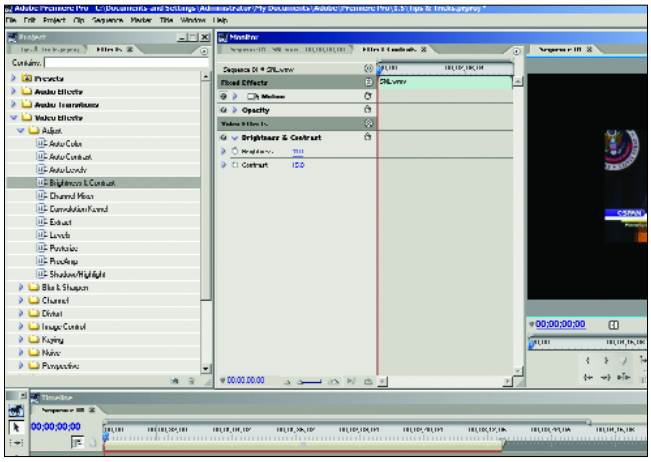
Brightness And Contrast

The first change you might make to a video is to adjust the brightness and contrast. In order to do this, double-click on the clip in the Timeline pane. This will add the video to the Monitor pane where you can add effects.

Now, click on the 'Effect Controls' tab in the Monitor pane. You will see Motion, Opacity and Volume controls by default.

Now, on the left, in the Project pane, click on the Effects tab. Go down to Video Effects > Adjust, and drag the 'Brightness & Contrast' effect to the Effect Controls tab in the Monitor pane. You will see the values "0.0" for both Brightness and Contrast. Hover your mouse over these values, keep the left mouse button pressed and then drag it left or right to adjust the values.





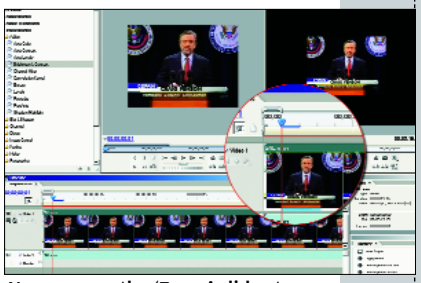
Set a brightness and contrast for a clip by dragging the effect from the Project pane to the Motion pane

Also remember to turn the effect on and off to preview changes and ensure you get the right values. You can do this by clicking on the icon on the left of the effect name, under the Effect Controls tab in the Monitor pane.

Zoom

You can increase the precision of your editing by zooming into the Timeline. This is not to be confused with the zooming we do with video or cameras. This zoom increases the precision of your editing by increasing the units on your horizontal time scale. So, if one unit on the time scale is, say, five seconds at normal zoom, at full zoom, each unit could be increased to four milliseconds. Considering that most video clips you may need to edit will be shot at the standard 25 fps (frames per second), which translates to 1 frame every 4 milliseconds, no more time scale zoom is needed.

In order to zoom in or out, drag the dark grey sliders above the time scales in either the Monitor or Timeline panes.



You can use the 'Zoom' slider to get more precision while editing—you can zoom into a clip to see each frame

Rewind That!

One really cool effect that you can use when editing video is the rewind, or playing a clip backwards. This is especially useful when showing something funny.

Actually, both the 'Rewind and Slow Motion' effects can be achieved via the same setting. Click on a video clip in the Timeline pane, and go to Clip > Speed/Duration..., or press [Ctrl] + [R]. This will bring up

Bet You Didn't Know

Quick Effect Search: A cool feature, when searching for a specific effect, is the 'Contains' field under 'Effects' in the Project pane.
Let's say we want to add 'Lens Flare' to the video. Instead of searching through the list of categorised effects, you can just enter 'Lens' into the 'Contains' field. This will show you all effects which contain the word 'Lens'—in this example, just 'Lens Distortion', and 'Lens Flare'.

Why Video Editing?

The first question that might come to mind is, "Why do I need to know about video editing? I'm not in the movie business!"
Consider this: You just came back from a vacation. You want to preserve your memories and share it with friends and family.

Unfortunately, all you took with you on vacation was a still camera. You have hundreds of photos, and let's face it, vanilla slide shows are boring. Photo albums are almost passé too. Using video editing software to create your own movie—complete with special effects, credits and added clips will definitely spice it up.

Then again, what about showing it at work? Today, we use video for almost everything. It could be a presentation, a company profile or even your very own video CV... Imagine the look on your boss' face if you can churn out an animated company logo with special effects and Dolby sound; something the company would have paid big to get made!

Similarly, you could just be making a short film for a college project or as a passionate hobby. You could edit that part in a wedding tape and deny absolutely that you ever tripped over a few wires, much to everyone else's amusement!

Perhaps those amateurish looking clips you shot of your newborn on your camera phone can finally be shown to others, complete with Star Wars style opening credits.

The possibilities are endless; it's all about how high your imagination can soar.

30 Minutes Expert

Transferring Data Using Infrared

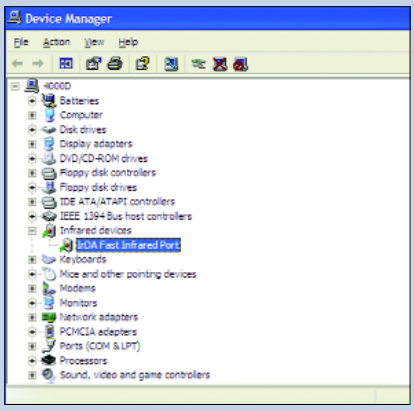
Share data and images wirelessly

Deepak Dhingra

Today, most laptop computers, smartphones and PDAs come equipped with an Infrared (IR) port. Although not as fast or as convenient as Bluetooth data transfer, IR is handy simply on the basis of its widespread availability. Since IR requires line-of-sight to work, you need to be careful to align the IR ports on the two devices you wish to use and ensure that neither of them is moved while data transfer is in progress.

Here, we look at the steps involved in transferring data using a laptop with Windows XP to another IR capable device such as a mobile phone.

STEP 1 Make sure the drivers for the IR port in the laptop are installed. To do this, go to Start > Settings > Control Panel > System. Click on the 'Hardware' tab and choose 'Device Manager'. Next, click the '+' sign next to 'Infrared Devices'. The IR device in the laptop will be listed here. Double-click on the device name to display properties. The window that pops up next will show the device status. You will need to install the correct drivers from the CD that came along with your laptop or procure them from your laptop vendor in case the drivers are not installed.

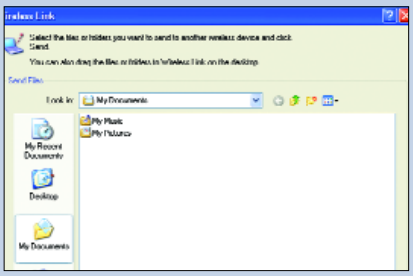


The 'Device Manager' shows the status of installed components

STEP 2 To transfer data such as images from the laptop to a mobile phone, enable Infrared in the phone. The procedure for this will differ according to phone manufacturer, but the menu listing to do this is usually available in 'Settings' or 'Connectivity' options in the phone menu. Refer user manual for help.

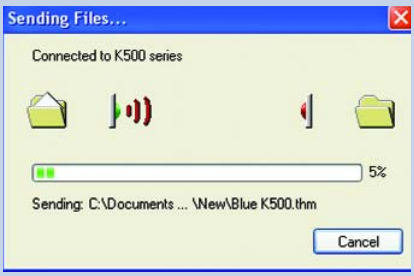
STEP 3 Place the laptop on a stable surface such as a table and align the IR port on the mobile phone with that on the laptop. The laptop will detect the new device automatically. A new icon called 'Send files to another computer' appears within the system tray.

STEP 4 Double-click on the icon. A browse window pops up. Browse to the location where the files to be transferred are located and select them for transfer.



Selecting files to transfer

STEP 5 Click on Send. The recipient device will ask for a confirmation on whether you want to accept the transfer or not. Select [Yes] to continue. The transfer will start and a progress window will now display the status.



Infrared transfer in progress

To send data from the mobile phone to the laptop, follow these steps.

STEP 1 Activate IR in the phone as in Step 2, above.

STEP 2 Navigate to the appropriate location in the phone where the file to be transferred is stored. If the phone has a file manager, this would be the most convenient way to do it. In case there is no file manager in the phone, the file will be stored in an appropriate location such as 'Image Gallery' for images or 'Recorder' for audio files and so on.

STEP 3 Press 'Options' or 'More' and then select the 'Send' option that will appear.

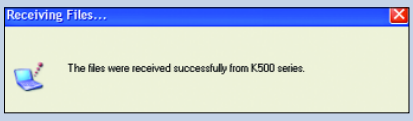
STEP 4 Select Infrared as the mode of transfer and align the IR port on the phone with that on the laptop.

STEP 5 A window will appear on the laptop screen asking you to accept the transfer. Click on Yes to continue.



Transfer confirmation window

STEP 6 After the transfer is complete, another window informs you that the files were received successfully. It's a swap!



File transfer successfully completed

Bet You Didn't Know

Real Estate: The one thing you can never have enough of is screen real estate. You can get more real estate for yourself if you press [Tab]. This hides the palettes and lets you enlarge your Timeline and monitor panes. To get the palettes back, all you need to do is press [Tab] again.

a box where you can choose to either speed up or slow down the clip-in terms of percent, or in terms of time. So if you created a clip that is, say, two minutes long, you can speed it up by 200 per cent, or just speed it up to be one minute long. You can also slow it down or play it backwards! Doing this also reverses the audio to play backwards. Check the 'Reverse Speed' and 'Maintain Audio Pitch' checkboxes to play the clip backwards and maintain the audio pitch as you slow down or speed up the clip.

Cut!

When editing video files, the most important thing you need to know is how to cut and join clips. Joining different clips together is easy using the Timeline pane. All you need to do is drag and place one clip after another to join them. Cutting clips is a little more complicated, though. You need to select the 'Razor' tool from the Tool Palette or press [C].



Now, carefully mark the point in the timeline you wish to cut the clip at, and click on it using the Razor tool. Make sure you zoom in to mark the exact frame where you want to cut. This will cut the clip into two separate clips. Now you can drag and place the two portions as you please. Press [V] to get back the Selection tool.

Separating Audio and Video

In the Timeline pane, when you add a video clip, its audio track is added automatically. If you drag the audio to the left or right, the video moves with it too. This is good as you need not worry about messing up the original clip. However, sometimes you may need to correct the original, say, for example, when the audio and video are slightly off sync.

To do this, you need to unlink the audio and video. Just select the track, and right-click on it. Choose 'Unlink Audio and Video'. Now you can move the audio and video tracks independently. You can also do the same thing by holding down [Alt] while dragging either the audio or video. Using the [Alt] key when dragging only temporarily unlinks the audio and video, so you do not need to go back and link them once you have placed them as desired.



Use the razor tool to cut a clip into two parts at a given location



Use 'Unlink Audio and Video' to edit only a video track or to correct a Lipsync problem

Video Capture

You can use Adobe Premiere Pro to capture digital video and store it to your hard disk. All you need to do is connect the digital camera or playback device to the computer using an IEEE 1394 cable.

Open Adobe Premiere Pro and create a new project, using File > New > Project, or [Ctrl] + [N]. Now, go to File >



Video device to capture video on the fly with Premiere Pro—all you need to do is connect the device to the PC using an IEEE 1394 cable!

Reader Tip

Extracting a song from a movie CD using VirtualDub: First open the movie file in VirtualDub. Now, in the Audio menu, make sure the Direct Stream Copy option is selected. After the options are saved, select the portion you want to extract. Just move the TimeLine slider until you reach the starting point of the song you want to extract. Press [Home] to mark the start position of the song. Now move the slider until you reach the end position of the song you want to extract. Press [End] to mark this position. Click on File > Save Wav and enter the location where you want to save this file as Temp.wav. As WAV files are uncompressed format, this will be a huge file but don't worry, you can convert this file to MP3 later, using encoders such as RazorLame.

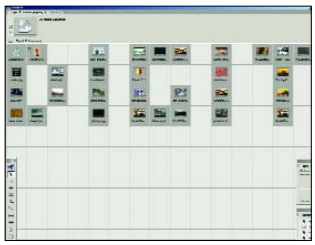
Contributed by Shahab Jafri (it_waaznt_me on the *ThinkDigit* Forum)

Capture..., or just press [F5]. Make sure the input device shows up on this screen.

Now, on the right, you will see two tabs—'Logging' and 'Settings'. Make sure all the options in these two tabs are set to your requirements and then capture your video.

Storyboarding

The most important aspect of editing video, or indeed, creating movies, is storyboarding. This will give you a general idea of how your movie is going to turn out. As video editing often takes days to complete, it will also save you from struggling to remember which clip you wanted to place where. There's no need to pull out a pencil and paper and start drawing—just use the Project pane as your storyboard.



You can use the Project pane to drag clips and arrange them to form a rough storyboard

Set the clips to display as thumbnails and add posters as described in the previous tip. Now, just drag and arrange your clips like a storyboard. It's really that simple!



Poster It

Quite often, you might have a large number of clips in the Project pane. The best way to view these is as thumbnails.

For this, click on the little arrow icon on the top right of the Project pane, go to View > Icon. Now, you can see all your clips as thumbnails in the Project pane. To increase or decrease the size of the thumbnails, click on the arrow again and go to Thumbnails and choose from 'Small, Medium or Large'.

Now you will have all imported clips displayed as thumbnails. However, a lot of clips may look alike, or have just a blank screen in the beginning. This can confuse you and you don't want to play every clip just to see which is which.

You can choose which frame to use as a thumbnail for a clip, also called setting a poster. In the Project pane, click on the clip you want to set a poster for, and then use

Video Editor Speak

Have you always wanted to be a video editor? Do you fancy yourself to be the next Sally Menke? To fit in, you need to understand the phrases and jargon video experts throw around:

AVI: Audio Video Interleaved. AVI files are audio-visual files that meet Microsoft's Resource Interchange File Format (RIFF).

MPEG: Motion Picture Experts Group. A compression standard for audio-visual files. MPEG-1 files are low-resolution, and are used for short movies on the web. MPEG-2 files are high-resolution videos for digital television.

JPEG/JPG: Joint Photographic Experts Group. This is an image compression standard which reduces image file sizes by deleting unnecessary data. Along with GIF, JPEG images are the most commonly used images on the web.

GIF: Graphic Interchange Format. One of the most commonly used image formats on the web. GIF images contain a maximum of 256 colours with minimal colour variations and shading and are thus small in size. The GIF format is not used for photographic images and are better suited for logos and buttons.

Composite: Two or more layers of video. You can superimpose two or more visuals, each of which moves independently. The simplest form of composites are subtitles and credits.

Rendering: Once you finalise and want to preview your video, the software computes how you want it to appear. It calculates frames, surfaces, colours, shading, texture, etc, and creates the rasterised images that you see on your screen. This is known as rendering.

Raster: A raster image is simply a matrix of points, also called pixels, made up of data. The data tells an image viewer whether the point is to be displayed as black white or colour. Common raster image formats are GIF, JPEG, PCX, and TIFF.

Cross-fade: Fading in of one audio or video clip while another fades out is known as cross-fade. For a brief moment, both clips are visible or audible. This is also called dissolve.



Cut Scene: An instantaneous end of one clip or scene and the beginning of another.

Lip sync: Synchronising the audio and video tracks so that sounds are heard at exactly the same time as the video depicts. An example is the synchronisation of speech with lip movements.

Mosaic: An effect which increases the size of the pixels to give a sort of stained glass or chess board effect. It is often used to artistically blur video.

Voiceover: Like the narrator of a story, a voice over is the voice of someone who is not in the movie.

Wipe: A transition effect that replaces one video clip with another but does so smoothly. It appears like a curtain being drawn from one side to the other.

Posterisation: The process of flattening a visual to remove all colour and brightness variations. It makes the visual look like it was painted with poster colours.

RAW: Unedited audio or video—straight from the camera.

Rough cut: This is an initial quick-edited version of a final product. A rough cut is generally used to make sure that the video follows a storyboard, and to gauge the final product.

Soundtrack: The audio portion of a video. A soundtrack contains background music, speech, voiceovers, etc. Most of us know "soundtrack" as the music and songs from a movie.

Sweetening: Enhancing the audio track by adding filters, effects and tweaking it.

30 Minutes Expert

Videoconferencing With IMs

Find out what the person on the other side of an IM looks like

Varun Dubey

Today, all of us have our favourite Instant Messenger (IM), and chances are, it's either MSN Messenger or Yahoo! Messenger. Communication is a snap, and we rarely even think about it anymore—when you want to chat with someone, you just log on and if they're not online, send them an SMS, telling them to get online, "NOW!". All this is not necessarily across continents; we at *Digit* do it across office bays!

Videoconferencing, hitherto a dream hampered by abysmal bandwidth—a result of the fact that the majority of Internet users in India connect through dial-up—has gained popularity thanks to the growing reach of 'Broadband' (we prefer to call it always-on, for obvious reasons), and people are now videoconferencing, using their favourite IM. So let's see how you can go about setting this up.

STEP 1 The Basics

A Web cam streams images on the Web by taking still images after small intervals of time. A standard TV displays images at 25 frames per second (fps); a Web cam takes images at about 15 fps.

In order to get a clear image, keep the light source behind the Web cam. You also need to remember that the video clarity is directly proportional to your connection speed, so if you use dial-up, expect to get very noticeable lag between images.

STEP 2 What You Need

A PC, webcam, microphone, Internet connection, Yahoo! or Hotmail/MSN account and an installed copy of MSN or Yahoo! Messenger—the accounts and IMs can be created and downloaded for free. Remember, these criteria apply to the person you are videoconferencing with as well. You can view another person's webcam without having one yourself, but that wouldn't be videoconferencing, would it!

STEP 3 Setting Up

Setting up your PC is simple: just plug your webcam, microphone and speakers or headphones into the proper sockets and install the software. Both, MSN and Yahoo! Messenger, will detect the webcam automatically.

STEP 4 Conferencing

You need to configure the sound and the video in your Web cam and microphone before you can use videoconferencing.

MSN Messenger

As with all things, MSN provides a wizard for this.

In the MSN messenger window, go to Tools > Audio/Video Tuning Wizard.



MSN Audio/Video tuning wizard

Just follow the on-screen instructions from then on—it will test your speakers for sound and your microphone for clarity. Now just go to Actions > Start a videoconference...' and choose the contact you want to start the conference with or just right-click a contact and choose "Start a videoconference".

Once you start your conference, you may want to improve on the image quality of your webcam. Just go to 'Tools > Web camera settings'. Here you can adjust the brightness, contrast and other image options.

Click on 'Advanced' for more detailed tweaking. Repositioning the pop-up window will also show you the changes as they take place.

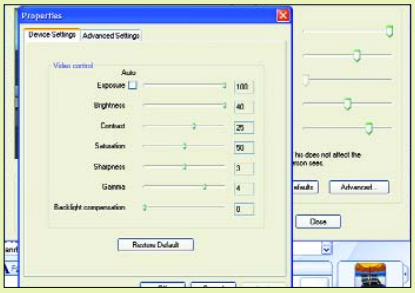
Yahoo! Messenger

To set up your webcam, microphone and speakers in Yahoo! Messenger, go to 'Help > Audio Setup Wizard'. Just follow the simple on-screen instructions.

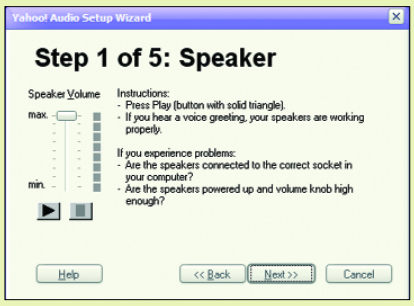
Yahoo! also tests for the echo level of the room you are in, and makes automatic adjustments.

Now, go to 'Messenger > Start My Webcam'. This will start your webcam and ask you to configure a few basic options. One great feature here is 'Super Webcam', which will let you send clearer, sharper and higher frame rate video. Of course, both you and the person you are conferencing with need to have fast connections.

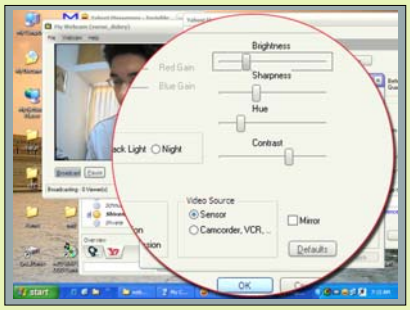
The one irritating aspect about Yahoo! Messenger is that there is no single option for starting a videoconference—you will need to start video- and audio conference separately.



Adjusting the Web cam image



Yahoo! audio tuning



Yahoo video tuning

Reader Tip

Cutting a portion of Video file using VirtualDub

This is a very useful feature of VirtualDub. With it you can extract a portion of a movie and save it. To extract a portion of video from a movie file, just put the movie CD in your CD drive and Open VirtualDub. Here, we are going to just extract the movie file and are not applying any compression to it. To enable compression, you will need Video Codecs such as XVid or Indeo. Now make sure the following settings are applied in VirtualDub:

VirtualDub > Options > Preferences:

"OutPut Color Depth" should be "Match Display Depth"

"Display" should be set to "Use DirectX for displaying panes"

VirtualDub > Video > Compression should be set to 'Uncompressed RGB / YCbCr'

VirtualDub > Audio > Directstream Copy

After the options are saved, select the portion that you want to extract. Just move the Timeline slider until you reach the starting point of the scene you want to extract. Press [Home] to mark the start position of the selection. Now move the slider until you reach the end position of the scene you want to extract. Press [End] to mark the end position of the selection. Now, go to File > Save as AVI or Press [F7]. In the Save As dialog box, specify where you want this file to be saved, hit [Enter], and you are done.

Contributed by Shahab Jafri (it_waaznt_me on the ThinkDigit Forum)



Keyboard Shortcuts

Here are some keyboard shortcuts you will need to know when using Adobe Premiere Pro. These will help you work faster

Selection tool	V
Track select tool	M
Ripple edit tool	B
Rolling edit tool	N
Rate stretch tool	X
Razor tool	C
Slide tool	U
Slip tool	Y
Pen tool	P
Hand tool	H
Zoom tool	Z
Navigate through editable fields	Tab
Cancel capture	Esc
Eject	E

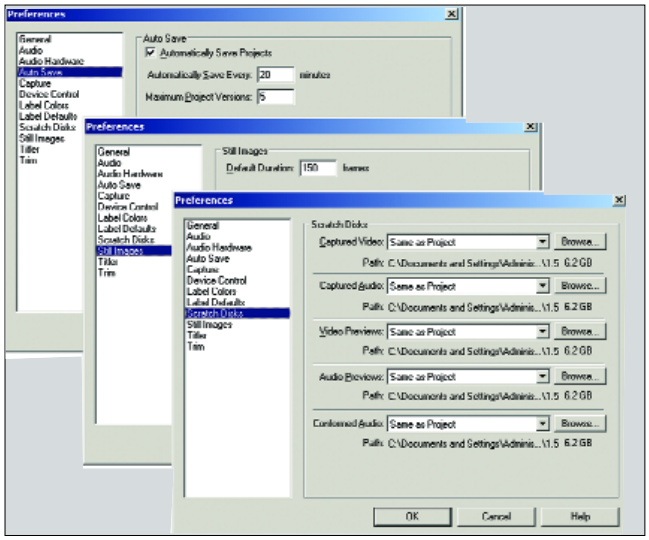
Preferences

As with any software, you need to set preferences and default values for a lot of tasks. Thankfuly, this is easily achieved in Premiere Pro by going to Edit > Preferences, and then clicking on an option. The available options are: General, Audio, Audio Hardware, Auto Save, Capture, Device Control, Label Colors, Label Defaults, Scratch Disks, Still images, Titler and Trim.

The three most important settings that you need to modify according to your choice and computer hardware are:

Auto Save: Depending on available disk space, amount of editing and your paranoia, set the 'Auto Save Every...' value. Twenty minutes is fine, unless you are doing heavy editing, in which case you should reduce this. You can also change the 'Maximum Project Versions' value to a higher number. There is no need to reduce this, as it is vital to have at least five file versions when editing video.

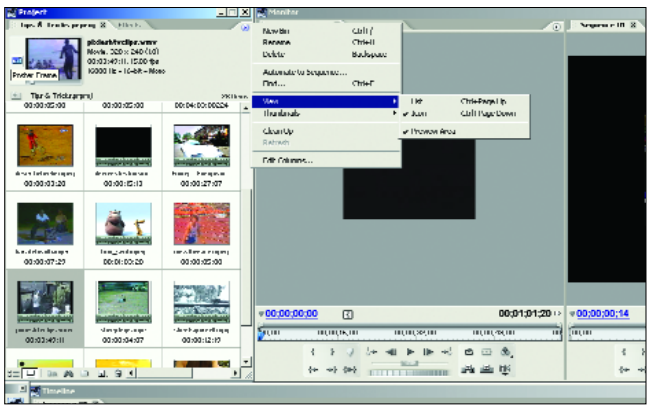
Scratch Disks: Depending on your computer configuration, and free space, you should modify these values. For example, if your computer has more than one hard disk, you can set the captured audio and video and the preview files to the secondary hard disk. This is also helpful to those



Set your project preferences; the three most important settings are 'Auto Save', 'Still Images' and 'Scratch Disks'

the slider to select a frame that will let you easily identify which clip this is.

Now, click on the little camera icon (the Poster Frame button), which is located on the left of the project pane. This will set the current frame as a poster or thumbnail for the selected clip. Repeat this for all the clips that you want to set a poster for.



Set the clip view in the Project pane to Icon and use the 'Poster' button to set a recognisable frame as the clip icon

who do not have a lot of free space on the C: drive.

Still Images: One of the most irritating experiences is when importing still images. By default, a still image is set to display for 150 frames. You can choose to increase or decrease this default value to say 250 frames (10 seconds) or 50 frames (2 seconds). This will save you the hassle of resizing each image individually.

Slideshows

Even if you are just using pictures, and not video, you can make some cool looking slide shows with background music or commentary. Importing a folder of pictures is all you need to do.

To start, drag a picture from the Project pane to the Timeline pane. Use the Effects tab in the Project pane to select a transition effect. Now, drag the effect to the beginning of the picture in the timeline. This will add the effect and you can view it using the Monitor pane. Just add more pictures and effects for them. Once you are done, you can add voice or music to the video.



Titles

No movie would ever be complete without titles and credits. After all, the hard work you put in entitles you to some credit!

You can add titles by going to File > New > Title..., or press [F9]. A 'Title Designer' box pops up for you to design your titles.

The first thing you need to do is set a text area. Now set the normal font and tab settings using the options on the right of the box. You have to select whether you want the title to be still, roll or crawl. Click the button next to the option you select to see the settings. For example, if you selected 'Roll', you should click the options button near it and check the 'Start Off Screen' and 'End Off Screen' checkboxes. This will make the titles roll from bottom to top.

After you are finished, close the title box after saving the file when prompted. The title will appear in your Project pane as <filename>.tl. Now, you can just drag it to your Timeline pane and place it. Remember to preview it, though!

Exporting

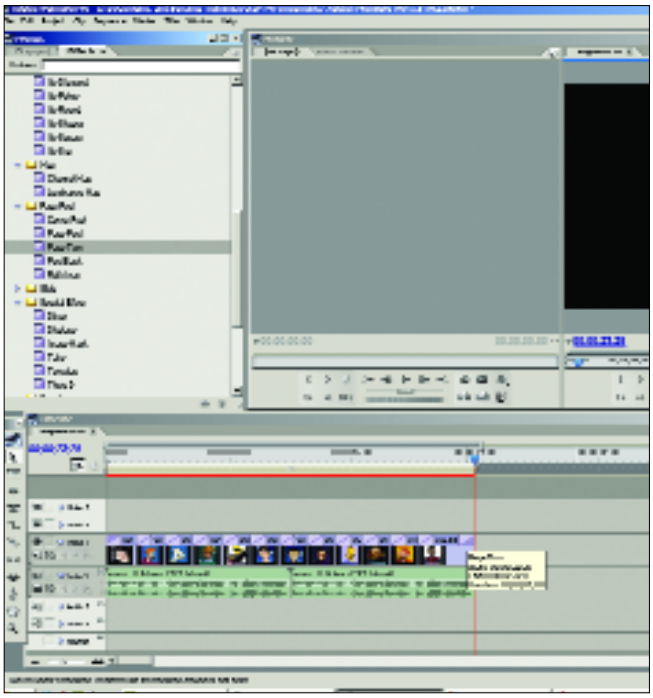
With your editing done, you now need to export your video to a suitable format. Click on File > Export > Movie... or click [Ctrl] + [M]. A box pops up, and you need to choose what settings you want. Click on 'Settings...', and you can set the format to export—GIF, AVI or any of the other available options. ☒

Hardware Requirements

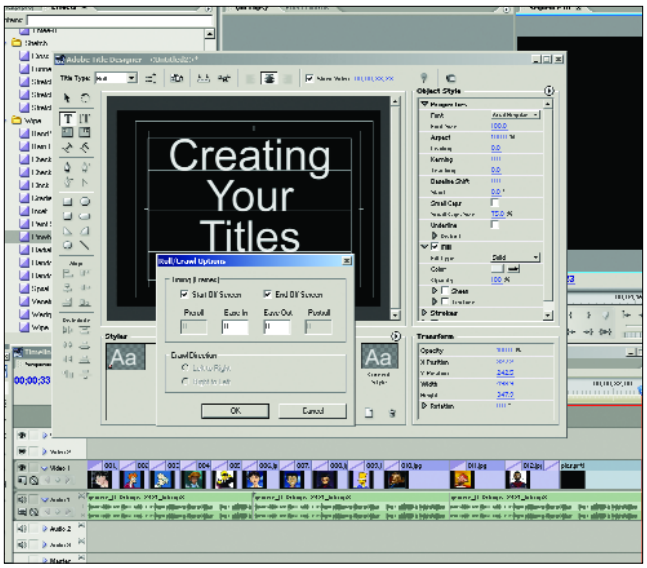
You need to remember that video editing is very system intensive and for satisfactory results, your system should meet or better the following system configuration:

Microsoft Windows XP
Pentium 4 1.7 GHz
512 MB of RAM
20 GB free hard drive space
DirectX–compatible sound card (ASIO compatible card recommended)
1,280x1,024 32-bit colour graphics card with OpenGL

For DV: FireWire port and dedicated 7200rpm Ultra ATA 100/133 SCSI hard disk



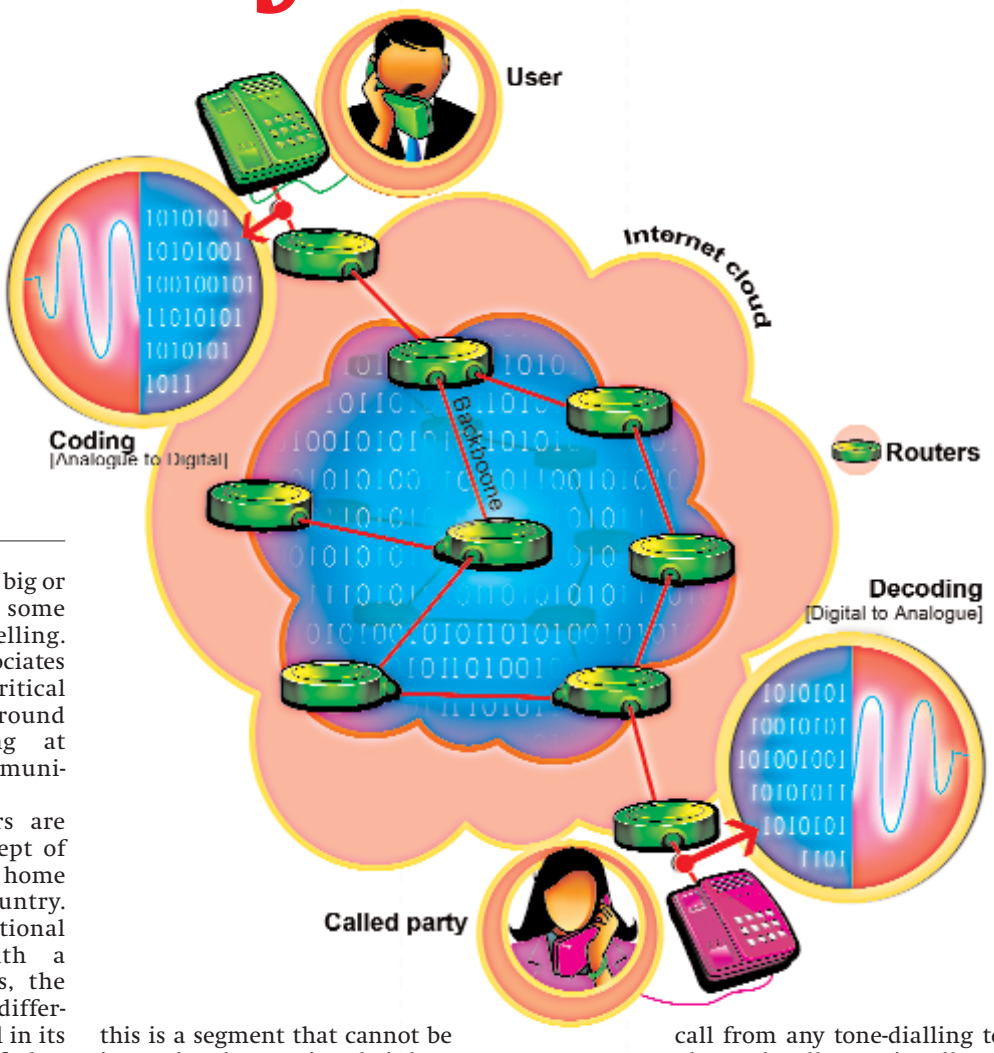
Create slide shows as AVI files by applying Video Transition effects to still images. If you don't need any audio, you can create a slide show as an animated GIF image instead



Create opening titles or closing credits in Premiere Pro, using the 'Title Designer' feature

Call Global, Pay Local!

Annoyed at spending a fortune on long distance calls? The answer is calling cards, a reasonably-priced option for individuals and SoHos



Infographics Binesh Sreedhar

Preethi Chamikutty

Today, any business, big or small, demands some amount of travelling. Keeping in touch with associates and colleagues is also a critical aspect. Organisations around the world are looking at reducing ever-rising communications costs.

As a result, travellers are warming up to the concept of using calling cards to call home from a foreign country. Although the international market is flooded with a plethora of calling cards, the Indian scenario is vastly different and the concept is still in its infancy. Only a handful of players such as BSNL, MTNL, VSNL or Tata Indicom in the public sector and Reliance, Net4India and Bharti Infotel in the private sector offer these services.

Despite the lack of services being offered, though, the outlook for the future is a positive one. With 6.8 crore telephone lines, India boasts an annual growth rate of 22 per cent in basic telephony and over 100 per cent for cellular and Internet services. Tele-density has risen to eight per cent already.

The Players

Although young, telecom companies in India have realised that this is a segment that cannot be ignored and are trying their best to beat each other in the race. Here's a look at the different options available.

VSNL: Since the takeover by Tata Teleservices, there have been a lot of innovations at VSNL. The Tata Indicom range includes the 'Tata Indicom Calling Cards', 'Global Calling Cards', 'Hello Duniya' calling cards and 'India-On-Call' calling cards.

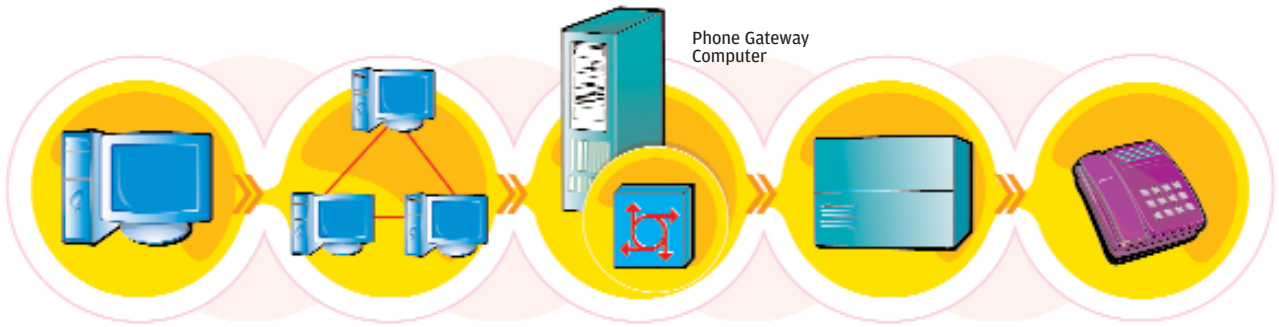
BSNL: BSNL's prepaid card is called the 'India Telephone' card which can be used to make STD, ISD and even local calls.

MTNL: MTNL is currently offering the 'Virtual Calling Card' in its markets and is aimed at the traveller. It allows users to make a call from any tone-dialling telephone locally, nationally and internationally.

Reliance: Reliance Infocomm has launched the 'World Card', a prepaid international calling card. The 'World Card' is a prepaid, rechargeable account-based service that can be used from any Reliance phone—RIM (post- and pre-paid) and Reliance IndiaPhone (Fixed Wireless Phones and Terminals).

Bharti Infotel: IndiaOne, the long distance service provider from Bharti Infotel offers the 'Home Touch International' calling card. This card can be used in more than 35 major countries including the US, Europe, Southeast Asia, Asia-Pacific and the Far East.

Calls Done Through Internet Telephony



Net4India: The only service provider who offers Internet telephony from is Net4India. Net4India's 'Phonewala' card is an Internet telephony service.

How Does It Work?

Calling card: A calling card is normally a prepaid card wherein the customer has to pay in advance for the calls he would make. The calling card enables anybody with a phone connection (even without STD/ISD facility) to make international or national calls.

Charges are normally levied only for the duration of the conversation and deducted from the card value. Almost all cards offer a toll-free access number. On dialling this number, an 'Interactive Voice Response' (IVR) instructs the customer on how to proceed.

Internet Telephony: VoIP (Voice over Internet Protocol) is the transmission of voice through IP packets and therefore, through the Internet. VoIP is a term used for voice being transported via the Internet, intranet or data links regardless of the standard, be it H.323 or a proprietary one in use. The data network involved might be the Internet itself or a corporate intranet or managed networks used by local or long distance carriers and ISPs. VoIP works on the packet switching technology that is different from the traditional phone system, which uses the circuit switching technology.

(Refer page 134 in the November 2004 issue of 'Digit' for a 'Visual Explanation' of VoIP)

Experts Say...

Telecom companies are optimistic about the Indian market. Sandeep Kolwadkar, deputy general manager—BD, BSNL Maharashtra, says, "BSNL launched the 'India Telephone' card 10 years ago when the market was not as big. But now, the market has picked up. Although cellular service providers have attractive schemes, there an incoming charge is applicable when your mobile is on a roaming mode. To save on this cost, businessmen opt for calling cards. At BSNL, we have deployed a new intelligent platform across the country. This helps bring together 40 lakh customers."



Photograph Shailesh Mule

> **To save on operational cost, businessmen opt for calling cards**
>
> **Sandeep Kolwadkar**
>
> Deputy General Manager—BD, BSNL, Maharashtra

Sanjit Chatterjee, general manager, Net4India says, "Currently, the rules and regulations of the DoT and TRAI are not favourable. The commercial viability is still not encouraging. Besides, the Internet penetration is another factor that needs to improve for our services to catch on. Broadband policy is also a concern. The market is actually in its initial stages and there are many more ladders to climb. Wi-Fi phones can help improve the demand for Internet telephony. That part, regular and sustained marketing efforts by companies will also help improve the market."

End Users

While a majority of the cards today are being used by the general public, there are also a few who use it to enhance their business.

Al Masaarr Computers, Surat, retail Net4India, Bharti Infotel, ICENET and other calling cards. They purchase these cards in bulk from the vendors and supply them to local stores where they can be purchased. Al Mufaddal of Al Masaarr says, "Our clients range from domestic users who spend up to Rs 2,000 per month to commercial users who spend up to Rs 1 lakh for buying Internet calling cards."

Friends Globe Travel, a travel agency, uses Bharti Infotel and Net4India's products for its business supplying the cards with their travel packages to customers. "We did some research and found that corporates who travel spend a lot of time trying to connect. A lot of money is also spent on this aspect. We decided to be the one-stop solution by including a calling card in the travel package itself. The response has been positive as it saves the traveller the trouble of finding a calling card in a foreign country."

Sutapa Mukherjee, an instructional designer at NIIT who travels widely for her work, likes to do her card purchasing abroad rather than in India. "I have only once purchased a card in India but it was not a good experience. There was a difference in the promised talk time and what I could actually use. Importantly, I never understood the balance on the card. In contrast, cards available abroad are cheaper and offer talk time of almost 10 minutes for as low as $2. The quality of the connection is also very good with those cards," she says.

What Next?

The deregulation of International Long Distance (ILD) and Internet telephony markets in India took place in April 2002. Deregulation provided new opportunities for competitive carriers who found that VoIP and calling cards met their needs for rapid deployment and minimal costs. With some more initiative by the government, this market is bound to grow faster. ■

preethi_chamikutty@thinkdigit.com

OLD WAY TECH WAY

Purchasing A Music CD

We gave Ram Mohan Rao a chance to get a favourite CD of his, on the house. Unfortunately, he was not allowed to get two different CDs—he had to get the same CD twice, one the Old Way, and one the Tech Way. Here's what happened when Ram went about buying them.

Ram Mohan Rao *(ram_mohan@thinkdigit.com)*



I found and bought the CD immediately



Amazon has a great collection, but shipping...

1

I already have a copy of Beethoven's 9th symphony, conducted by Karajan. Since that's my favourite composition, I decided to get a variation of it, by another composer—Riccardo Muti. Rhythm House in Fort, Mumbai, is a stone's throw from my place. I found the CD in a minute.
Time taken **10 minutes**

No Indian site had the CD available. I searched all over—Sify.com, Rediff.com, Indiatimes.com, and others—with no luck. Some didn't even offer music CDs; some found nothing with "Beethoven" as the keyword. I decided I'd have to get it from abroad.

Time taken **15 minutes**

2

There was an unusually long checkout line, but luckily, there were three people serving customers—that meant the queue wasn't that long after all. I was able to check out in less than 10 minutes.

Time taken **9 minutes**

Amazon.com was my site of choice, partly because I have shopped there before. As a matter of fact, I was very lucky to find the CD there, because it's not a very popular title. It took me just one minute to find it.

Time taken **1 minute**

3

It was still morning. I listened to the CD twice over before lunchtime. At Rs 295, I felt it was a steal of a deal!

Time taken **0 minutes**

Checking out was a breeze, of course. I had two viable shipping options—Standard International Shipping and Expedited International Shipping. I chose the latter because, at $11.98, the difference wasn't too much. The CD was $6.98.

Time taken **4 minutes**

4

Eleven days was how long I had to wait for the CD to arrive. Of course, I wasn't waiting with bated breath, since I'd already purchased the same CD at Rhythm House.

Time taken **11 days**

Total Time Spent: **19 minutes**
Total cost: **Rs 295**

Total Time Spent: **11 days 20 minutes**
Total cost: **$18.96 (Rs 850)**

And The Winner Is...

The old way wins hands down! Of course, there were two things at work here—first, the fact that I live so close to the music store, and second, the fact that Indian sites don't carry too many Western Classical titles. However, you can get songs online—single songs, without having to purchase the entire CD. This is something you can't do offline—CD singles aren't that much cheaper than entire CDs. Indiatimes.com, too, has music downloads.

Q&A

Your Questions, Our Answers

Building A Home Network

Q I have two machines to be connected with each other, a DAX LAN card and an AdCom LAN card respectively configured. One PC has the cable LAN card with its settings. How do I connect these machines with a crossover cable and share the Net on both machines? Both computers are Celeron 2.4 GHZ with 128 MB of DDR RAM and 40GB HDDs.

Santosh Parab

A Since you have not mentioned your OS, we are assuming you are using Windows XP. The host machine, the one that will connect to the Internet, will require two LAN cards, one to connect to the Internet and the other to connect to your home network.

Make sure you are working on the computer connected directly to the Internet when doing the following:

Go to **Start>Control Panel>Network and Internet Connections**.

Click on "Set up or change your home or small office network."

This will open up a wizard.

Click "Next" and you will reach a screen with three options. For your host machine, click the first option, i.e. "This computer connects directly to the Internet...."

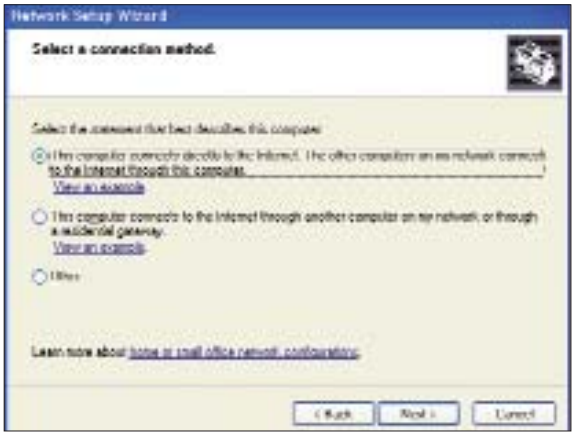
Click "Next" again, and your two LAN cards will be listed. Select the one which connects to the Internet and click "Next."

Fill in the computer description/name and other details, and click "Next". The computer will then prompt you to "Click Next to save Settings" and set your Internet connection.

Repeat the process on your other machine, except, this time, choose option two, i.e. "This computer connects to the Internet through another computer..."

Follow the instructions onscreen as before, and you are ready with your home network!





Choose your connection method—the examples should help

Browser Hijack

Q Recently, a search bar has been installed on my computer and I cannot remove it. My homepage has been set to web-search.com and cannot be changed. If I change it, it remains there once, but the site web-search returns soon. What do I do to remove this?

Aabir Datta

A This situation is termed as a browser hijack. The easiest way to get rid of this is to download and run AdAware, provided by Lavasoft: **www.snipurl.com/digitsafer** or Spybot Search and Destroy: **www.safer-networking.org/en/spybotsd/index.html**

You can find both Ad-Aware and Spybot on this month's Digit DVD. Look for them under "Digital Tools" and the "Security" sub-section.

You can also try using Cwshredder, from **http://snipurl.com/bgb7**.

Once the problem is fixed, ensure you upgrade to SP2 (if you are using Windows XP).

Mouse Hangs On Standby

Q I have a Pentium IV 2.6 GHz, ASUS motherboard, 256 MB of DDR RAM and an 80 GB Seagate Barracuda hard disk. The OSes are Windows 98 SE and Windows XP. The problem is that when my system goes on Standby in 98, my mouse stops responding when I try to log on again and I have to restart my PC. How do I solve this?

Amit Pure

A Microsoft has admitted to this problem in its Windows 98 OS family. This happens when Standby mode is invoked using the keyboard or a power management timer. If you use your mouse to invoke Standby, you will be able to resume properly. Alternatively, you can press [**Alt**] + [**Tab**] to bring your computer out of Standby.

In addition, you should update your keyboard, motherboard and mouse drivers. Also, make sure the power management mode you are selecting is compatible with your motherboard and/or other devices.

Messenger Mess

Q I own a P III 733 MHz with 128 MB of RAM and Windows XP Professional as the OS. Recently, my Messenger has started behaving erratically. I remember installing the latest version of Messenger after I reinstalled Windows XP and after installing Messenger 6.0, it says a

Hard Disk Disconnect

QUESTION OF THE MONTH

S.K. Saikia

Q I have a P-III 500 MHz computer with a 10 GB HD (two equal partitions) and 256 MB of SD RAM running Windows 98 SE. Recently, I was running out of disk space, so I added a new 40 GB HDD (with three partitions) and installed Windows 2000 Professional on the first partition (this was done with the original HD disconnected). Now, I have a problem. To choose the OS at start up, I have to enter the BIOS setup and change the boot-up disk select to make the choice. Is there an easier way to toggle between the two OSes? Or, is there a boot manager to tackle my problem?

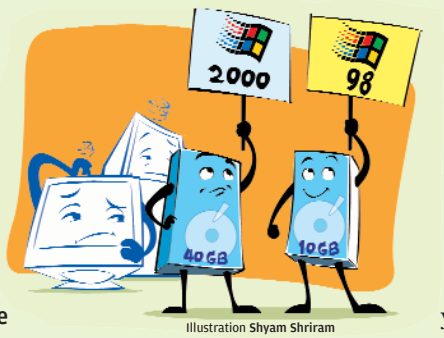


Illustration Shyam Shriram

A Yes, there are some boot managers you could use. You could try the Partition Boot Manager (**www.sadevelopment.com/**) or the OSL2000 Boot Manager (**www.osloader.com/**).

However, if you are not too keen on using this method, the alternate manual solution is that you must reinstall both your OSes with *both* hard drives connected. Simply reinstalling the OS will not cause data loss, but as a safety precaution, back up anyway!

newer version is available, so I click the update link and I download and install it. However, after I install, the next time I start Messenger it shows the same message. Even when I tried the bundled Windows Messenger from the root directory (C:/Program Files/messenger 6.2/msnmgs.exe), the same message appears. What do I do?

Arun Thampi

A Windows XP has two messengers; Windows Messenger and MSN Messenger. The latest version for MSN Messenger is 6.2. The directory where you are starting from is that of MSN Messenger and NOT Windows Messenger. The directory for Windows Messenger is **C:\Program Files\Messenger**, where C: is your default Windows directory.

You can download the latest version of Windows messenger from **www.microsoft.com/windows/messenger/download.asp** or you can find the latest version of MSN messenger on this month's Digit DVD. Or, head to **http://messenger.msn.com**. If the problem persists, uninstall both messengers and delete their folders, and reinstall the latest versions manually.

However, you cannot sign into both messengers at the same time using the same ID. MSN Messenger is better and has frequent updates; we recommend you use it.



Convert to PDF

Q I have a Pentium III 866 MHz, 192MB of SDRAM, a 20 GB HDD, Windows Me, and Adobe Reader 6.0. I want to know if we can convert scanned documents into PDF documents.

Mihir Kulkarni

A It is possible to convert various image files such as JPEG, TIFF and BMP to PDF. However, for that, you need Adobe Writer. Adobe Reader cannot be used for this purpose. You can try some of the freeware available off the Net—for example, "Convert Image to PDF," available at **www.softinterface.com**

Multiple Excel Windows

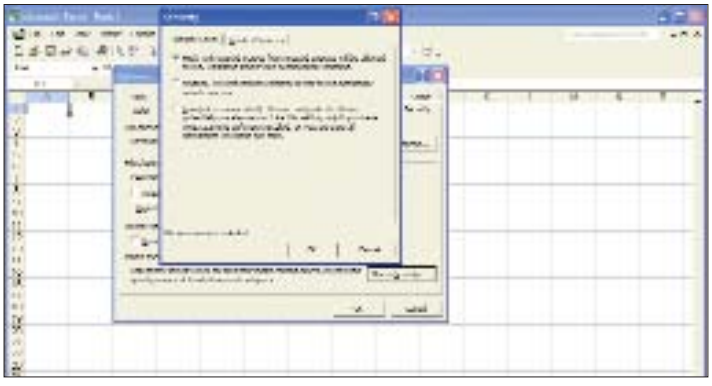
Q In Windows 98 SE with MS Office 2000, six to seven Microsoft Excel programs start when Windows 98 starts up, and in every instance, it asks whether to enable or disable macros. Even when running any other application, Excel starts, asking whether to enable or disable macros. When I try to shutdown or restart the computer, Excel starts. Only Windows Explorer and My Computer work properly. When browsing for files, the Excel icon is not shown in My Documents. This has happened when I copied some Excel files from my friend. When I tried looking for viruses, it showed a "wyx boot sector virus," iworm.blebla.in and w32.pesin.A. All these were repaired, but the viruses persist...

Sandip Thakkar

A It appears you have contracted a Macro virus. To clean this, update your virus definitions and scan your system. It should delete/clean the file. The reason for the problem is that the virus is trying to run a macro on your system and since the macros warning is enabled in Excel, the warning is flashed every time it tries to run it.

I Want My Video, Too

Q I have an assembled a PC with an Intel P IV 1.7 GHz processor and a 40 GB HDD with 256 MB


Change your Excel Macro settings here

Rocking To "iTunes"

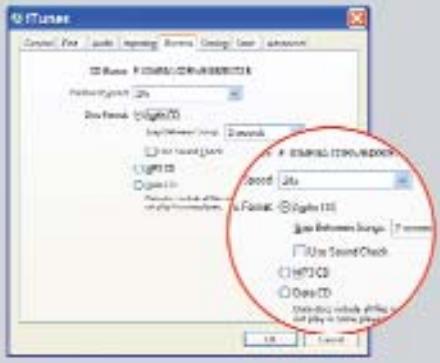
Despite there being no dearth of music players, Apple's iTunes has grabbed the limelight with its blend of features. The simple-to-use interface, and unique features including a lossless encoder makes iTunes a worthy try, if not a must-have jukebox. Here, we take you through some simple settings that you should do once you install the player to get the most out of it.



STEP 1 **Setting up the main Window:** The main window is configurable to show details apart from the usual ones. To configure it, Click "Edit" and "View Options." This opens the "View Options" selection box. Select the options you want displayed in the main window.



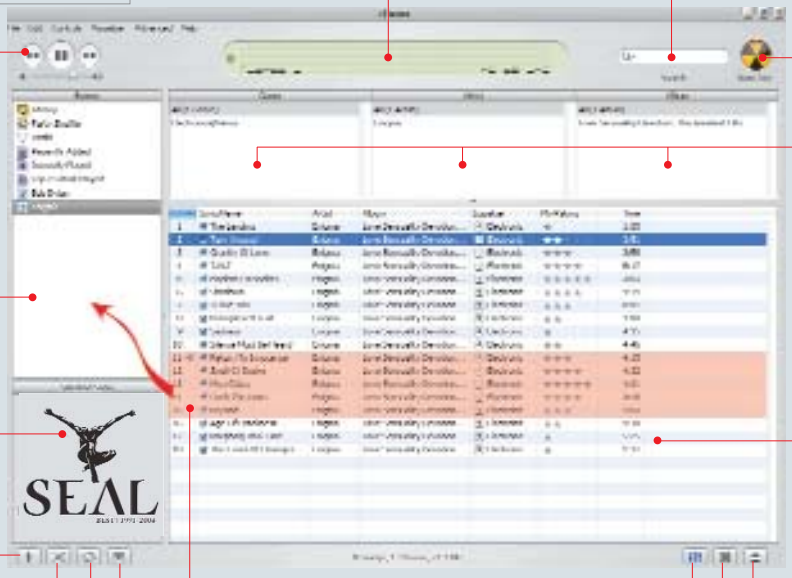
STEP 2 **Setting up the encoder:** The AAC encoder used in iTunes is considered the best lossy encoder. Apple, has gone a step further to include a proprietary lossless encoder. To set this up, go to "Edit" and select "Preferences." Go to the "Importing" tab, and select the type of encoder under the "Import using" menu. Select the one that gives you the best results. You can also do this through the "Settings" menu.



STEP 3 **CD burning settings:** iTunes can also burn your music compilations. To make the settings for the recorder, go to "Edit" and click "Preferences." In the dialog box, click the "Burning" tab. This tab lets you select the speed at which you want to burn the CD. You can burn the compilation in three forms—Audio CD, MP3 CD or Data CD. Select the type you want, and just go ahead and burn it!

Keyboard shortcuts	
Play/Pause:	Spacebar
Next Song:	Ctrl + Right arrow
Previous Song:	Ctrl + Left arrow
Volume up:	Ctrl + Up arrow
Volume Down:	Ctrl + Down arrow
Mute:	Ctrl + Alt + Down arrow
Close iTunes:	Ctrl + W
Add files to library:	Ctrl + O
Highlight current song:	Ctrl + L

Know your Player



The infobar—shows song information such as time left, total time and more

Search window—search your song by artist, song name or use other parameters

Main playback controls

The burn button (single click to burn your compilation)

The browser window (browse your collection by Genre, Artist or Album)

Playlist selection window (Source window)

Artwork window

The main window (displays song, artist name, and ratings, according to your customisation—refer Step 1)

Create new Playlist

Toggle shuffle

Repeat (Three modes)

Artwork window toggle switch

Select songs and then drag 'n drop them into the source panel, to create a new playlist entry.

Eject CDs

The visualisation button

The equaliser button (pops it open)

of SD RAM. Recently, I have encountered a strange problem. I have a video clip in .avi format that is 341 MB–58 minutes long. When playing the file with Windows Media Player, the sound is playing, but no video is visible and the error message "Error downloading codec" flashes. Do I need to download any codec to view the video of the file (it's a video clip, as shown by the watermark). If yes, can you give me the link to download that codec? The clip is not playing with Winamp either.

Aveek Chatterjee

sos@jasubhai.com

E-mail us your computing problems, and we may answer them here! Since we get more mails per day than we can handle, it may take some time for your query to be answered. Rest assured, we are listening!

A There are several ways to compress a video into .avi format and so, there are different codecs that you will need to view all of them. To find out what codec you need for a particular movie, you can install a program called Gspot. This program tests a movie and tells you what codec is required and also whether or not you have that codec installed on your system. You can then search and download the relevant code and play your file. Alternatively, download and install VLC player, which plays most video formats. You can download these at **www.headbands.com/gspot/** and **www.videolan.org/vlc** respectively.

OS Does Not Install

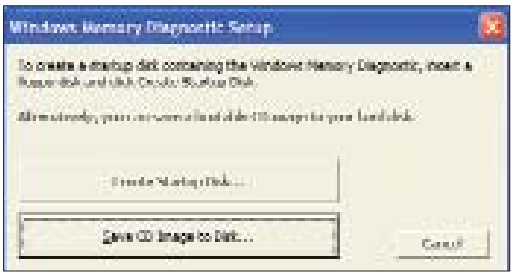
Q I have a Mercury (KOB 810e FST) motherboard with a Pentium III (Coppermine) processor, 128 MB of RAM and a 40 GB Seagate Barracuda HDD. I had four partitions with Windows 98 SE as the primary and Windows XP Professional as the secondary OS. Recently, I formatted my drive and wanted to install the same OSes as before. Windows 98SE installed fine, but in case of Windows XP Pro, it gives me the following error message during device installation: "BAD_POOL_CALLER..... ***STOP: 0 X 000000C2 (0 X 00000040, 0 X 00000000, 0 X 80000000, 0 X 00000000)". I have not been able to install the OS, as it shuts down automatically. I tried it several times (including formatting again), but in all cases, it refuses to install properly. What is the problem?

Kunal Chowdhury



A This generally occurs due to a faulty driver or software. If you have recently installed any new drivers for your Windows 98 system, roll them back to the previous versions or contact the manufacturer for an update. If you installed any new software, uninstall that as well. If you have installed new hardware between two installs, get updated drivers for it. If none of these work, it's probably a RAM problem. Go to **www.memtest86.com** or get the utility at **http://snipurl.com/500q**. Download either utility and run it.

If you continue to get errors, test your RAM module by inserting it into some other computer. If you get a similar error, you need to replace your RAM. If it works fine, you should test your RAM slot by putting the RAM chip in a different slot on your motherboard.



Save the Windows memory diagnostic report

Spyware Again

Q I have a system with a Pentium IV 2.4 GHz original Intel motherboard, and the OS is Windows 98. After my system boots up Windows, it gives me an error stating "run.dll error loading C:\progra ~ 1\wildta ~ 1\apps\cda\cdaeng ~ 1.dll. This system cannot find the path specified."

Rakesh Sachdeva, via e-mail

A This is a spyware infection. Download AdAware from **http://snipurl.com/1jaz**. Make sure you update the software. Run it and then remove all the infected entries it finds. Close the program and reboot into safe mode. Make sure you can see all hidden files and folders. If found, delete the following files or folders.

C:\Windows\LOVYCFI.exe
C:\Windows\NAEHORUN.exe
C:\Program Files\Bearshare (folder)
C:\Windows\System\P2PNetworking (folder)
C:\Program Files\Viewpoint (folder)
C:\Windows\System\sihrncsm.exe
C:\Program Files\ARES (folder)
C:\Program Files\Evidence Wiper (folder)
C:\Program Files\Spywarekilla (folder)

Reboot, and problem solved!

Connection Hangs Repeatedly

Q Whenever I go online, after about eight to 10 minutes, data transfer stops. The problem stops after I restart the computer. But after about seven or eight minutes, the problem returns and no webpage loads. I have formatted my C: drive and the problem was solved for a few days. I connect using a dial-up connection.

Kaushik Dasgupta

A If you are using Windows XP, update your drivers and OS with the latest patches, and your problem will be solved. If you are using Windows 98, go to the MS-DOS prompt and type in "**ping www.yahoo.com**." If you get an reply, simply reinstall IE.

If, however, you get a "Request Timed Out" error, you will have to reinstall your dial-up adapter. For this, go to **My Computer>Control Panel>Network**. In the window that opens, you will see an entry called "Dial-Up Adapter". Remove it and reinstall. That should solve the problem. ■

Of Carry Cases And Things

Agent 001 is bowled over by the range and variety of laptop accessories you can find in just one shop—at Lamington Road, of course. Here's his report, along with a Q&A session

Travelling and haggling come naturally to me. However, when you have to be Agent 001 and carry around a 3-kg laptop to file your report, life is painful. Pain turns to agony when you consider the natural pitfalls of such a situation, what with a drained battery, heating issues, power connection issues and Internet connection woes. So, with Rs 4K in my pocket, I set out to save my shoulder and help similarly afflicted souls.

Reconnaissance is what distinguishes a good agent from a 001. I make it a point to arm myself with relevant information before venturing into the market. I placed calls to agencies mentioned in the classifieds. The first one from Mumbai offered laptop carrying bags from as low as Rs 1.5 K, going up to Rs 5.5 K.

I learnt that small, portable mice are the latest buzz. Data cables, external combo drives (especially for older laptops), and modem cables all followed closely. These components vary in price from as little as Rs 300 to Rs 1 K, except for external optical drives, which cost Rs 8K onwards. With the preliminaries taken care of, it was time for some real action!

I first headed to—say it with me—Lamington Road. There is a shop located right opposite the local police station, with placards of major vendors including HP, Dell and IBM. Sure enough, they claimed to have "everything you can attach to your laptop." I loved the place already!

First came a laptop bag by Dicota—an international brand that specialises in carry cases. The bags were good and stylish, and offered plenty of storage options. The Dicotas started at Rs 4.5 K—for the leather quality.

He then offered some mice designed especially for laptop users—I may add, a Bluetooth wireless mouse from Microsoft with a snap-in receiver priced at Rs 2.1 K. It was neat but I opted for a more down-to-earth piece from Logitech for Rs 500.

Executives who swear by PowerPoint would love to know of a tool that allows you to shuttle wirelessly between slides. The shop had good remote control units that offered to do that, but they cost Rs 4 K. Alternatively, I could buy a Bluetooth USB adapter for Rs 2 K and use my Bluetooth-enabled phone as a remote. Cool!

For transferring data between my laptop and my main computer, he had USB 2.0 cables meant to connect two PCs/laptops directly, and although they boast of faster data transfers, they also cost Rs 1.8 K.

I was also looking for compact speakers, but all he could offer me were run-of-the-mill ones from Creative and Mercury that were too big for comfort. Good ones from Cyber Acoustic are available for around Rs 2.5 K, but he didn't know!

Interestingly, I learnt that most people connect their laptops to the Internet using their cell phones. Cables for this, I found, cost between Rs 300 and Rs 650, while retractable modem extender cables were for Rs 600. I settled for a cable that will connect my second CDMA phone to the laptop.

A notable product that I came across was the Rs 1 K USB hub. This increases the number of USB ports on your laptop. The treasure trove I had walked into also offered products such as LED lights for using a laptop in an airplane, cables that charged a cell phone via USB ports, notebook coolers, extra battery packs, power adapters—whew!

Summing up my operation, I have compiled a handy little box that lists the products in descending order of importance. Agent 001, over and out!

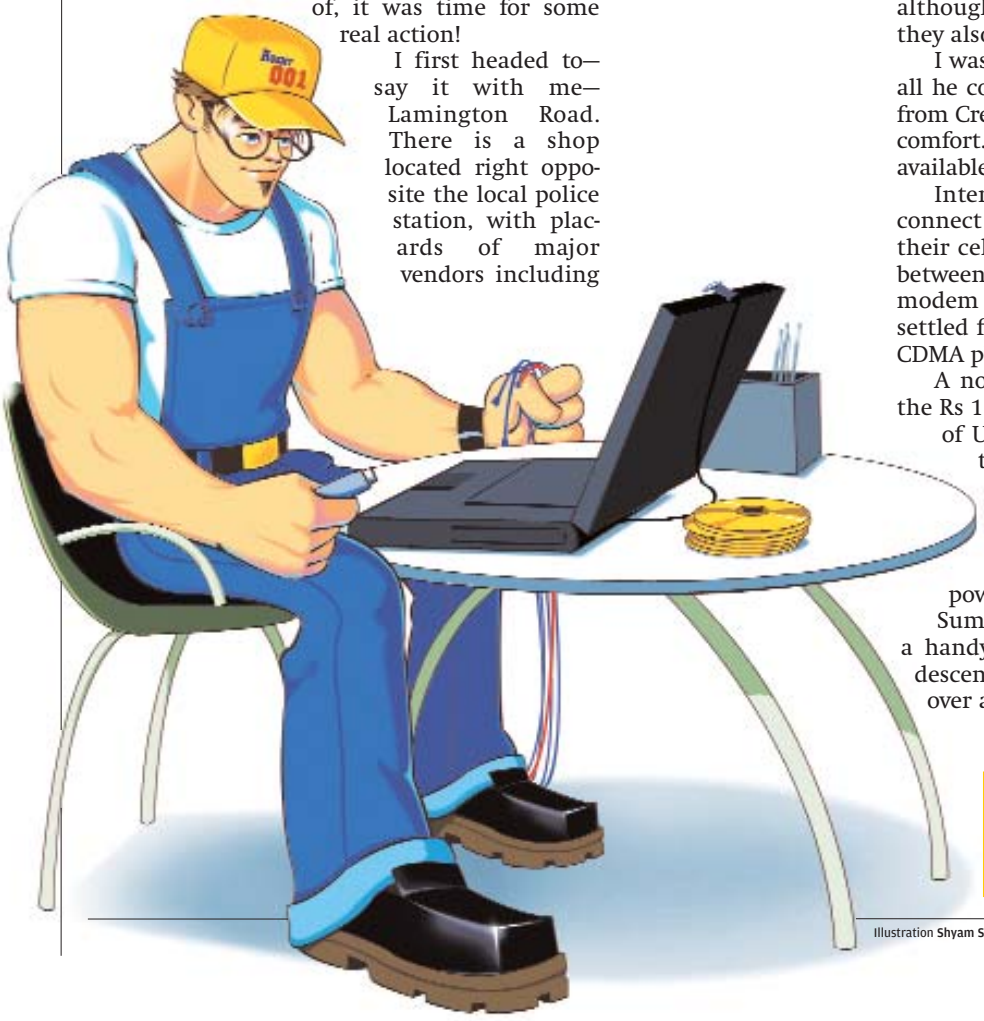


Illustration **Shyam Shriram**

Turn over for **Accessories Price List,** and **Answers** from Agent 001 to your tricky buying questions

Laptop Accessories Price List

Product	Price Range (Rs)
Dicota Carry Case	4,500
Travel PAC universal power adapter	900
Data cable for Reliance phones	350-650
Standard optical mice	350-1,000
Microsoft wireless optical mouse	2,100
Presentation remotes	4,000
Cyber Acoustics laptop speakers	2,500
Bluetooth adapter	2,000
PC-to-PC USB 2.0 cable	1,800
USB hub	1,000
LED light for notebooks	400
Notebook cooler from Antec	2,400

Note: These prices are indicative of the Mumbai market and may vary from city to city

Buying The Right Power Supply

Q I recently upgraded my PC to an AMD64, and my older power supply cannot cope with the processor's power demands. As a result, my system does not boot when I connect an additional hard drive or an optical drive. Can you suggest a power supply that offers decent performance at an affordable price?

Rohit Kumar

Before buying a power supply, take note of the upgrade path you will follow. If you are a gamer, then at some point, you will invest in a high-end graphics card. Most next-generation graphics cards require external power, which is drawn from the system SMPS. Drives will also be a part of your future upgrade. It is advisable to make the power supply as robust as possible for your future demands.

For the AMD64 motherboard, you will require a 350W power supply at the least, but I suggest you invest in a 400W. You need to be careful, as the market offers a variety of 400W units, not all of which are truly rated at 400. The SL range from Antec is good value for money, and you can get a SL400 for Rs 2,450 with a three-year warranty. The VIP 400W SMPS from Kunhar peripherals is Rs 2 K with a three-year warranty.

Waiting For PCI Express

Q I have an AMD Athlon XP 1.7 GHz with a Gigabyte 7A2mmh motherboard, a 40 GB HDD, 256 MB of SDRAM and GeForce4 MX 440 graphics card. Is this sufficient for playing all PC games, or do I need to buy a better graphics card? And for a new card, will I need to change the motherboard?

Murtuza Madraswala

The GeForce4 MX series card can run most games; in fact, Doom3 and Half-Life 2 also run on these cards, but at extremely low settings and therefore without any special effects. You don't need to upgrade your motherboard if you are settling for an AGP 8X card, since these are backward-compatible. If you are a gamer, I suggest you stall your graphic card purchase for the moment. The reason is that all upcoming games will be more demanding in terms of CPU power and memory resources, and your processor can be a real bottleneck. Your current system will easily bog down with the demands of a high-end game, even with a new AGP card. Your only solution would then be to upgrade your entire rig. However, all new motherboards will soon start sporting PCI Express slots, making your brand-new AGP card obsolete! I'd suggest you change your entire rig when PCI Express enters the mainstream.

As far as storage devices go, opt for reliability; go for well-known brands

Ask Away

Want some tech product, but don't know how to go about buying it? Send a mail to aget001@thinkdigit.com, and get your queries answered

Pen Drive Mightier... ?

Q I need to carry my work between my office and home. Currently, I use a CD-RW. Sometimes, however, the data is not written properly and I am unable to work at home. The CD-Writer seems to be the culprit. Instead of investing in a writer, I would like to buy a pen-drive or some other compact solution. Since I often also transfer music and other stuff to my home PC, I was thinking of investing in a larger capacity drive. Can I get a 1 GB drive for around Rs 4,000?

Nilesh Prabhu

Pen drives are getting cheaper. Today, you will find 1 GB drives in the Rs 4-4.5 K range. The problem is that these drives are unbranded. The last time I asked about a Transcend 1 GB, it was Rs 5,250! I suggest you wait a couple of months. As far as storage devices go, put your money on reliability: opt for well-known brands. Also, check out external hard drives. A 20 GB drive would cost around Rs 7.2 K. *Note: Beware! Some cheap imitation flash drives are marketed as 512 MB, but when used, only 256 MB is reliable and usable.*

Products	Transcend	Kingston
1 GB	Rs 5250	Rs 5350
512 MB	Rs 2950	Rs 3000

Cabinets For All

Q I recently bought a Pentium 4 3.2 GHz processor with an Intel 875PBZ motherboard and an nVidia FX5950 card. My assembler installed these in a Mercury case, with one exhaust fan. The system used to work perfectly, but after a while, my games started hanging. I installed the Intel Desktop Control Centre and it keeps popping up the message "Zone1 and Zone2 temperature exceeded." My friends tell me that my cabinet is not properly ventilated. Can you suggest something better?

Rohit Bhandari

Before investing in a new cabinet, check up on a few things such as the speed of the processor fan, the fan mounting, whether the heat sink properly touches the processor core, etc. Then, check the flow of air within your cabinet. If possible, make it cross-ventilated, so the air flows in from the front of your cabinet and goes out from the back. If none of this solves your problem, you'll need to buy a new cabinet. In good cabinets, you'll have plenty of room left after component installation. Make sure the cabinet is deep and spacious. For newer processors, buy cabinets with lateral blow holes that suck the hot air out from the sides. Check out cabinets from Antec and VIP. ■



The YEAR Of The UPGRADE

The year 2004 was momentous in many senses—several new technologies were introduced, and falling prices meant that existing tech categories saw a surge in acceptance in India.

But it will be in 2005 when the some categories will begin to go mass. Digit has shortlisted 10 such. We hedge our bets on these categories because Digit feels their time has come. Over the next 20+ pages, you will see why.

We have charted trends—both Indian and global; we have spoken to industry insiders, and users (both potential and existing), asking them what this year would look like. They did not disappoint us. Read on...



Photographs Jiten Gandhi, Mexy Xavier, Imaging Atul Deshmukh



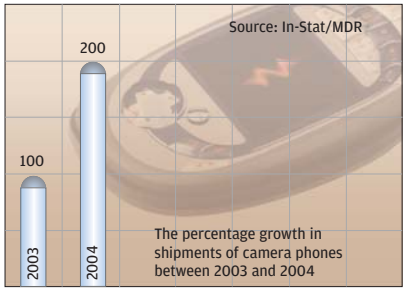
Hold On! Let Me Click A Photo

Forget the scandals over camera phones; this category can only get more and more popular

Aditya Kuber

Of late, camera phones have caused quite a furore—unfortunately, for the wrong reasons—and have been the subject of much apprehension. One thing is for sure, though. They have quietly slipped into our daily life without us noticing.

It is also no secret that more and more people now prefer to buy camera phones as against regular ones. Increasingly buyers have started to base their buying decision on this parameter rather than the reception quality of the handset. With industry bigwigs such as Reliance offering camera phones at as low a price as Rs 6,500, the penetration is all set to rise further.



Camera phones, when combined with services such as GPRS, make a potent communication tool. Thanks to these contraptions, you can now send a photograph of your newborn to anybody at the press of a button.

Such convenience leverages their value from a luxury item to a must-have device.

The Past

The first camera phone was introduced in Japan by a leading mobile operator belonging to the Vodafone group and was manufactured by Sharp. That was four years ago and since then a lot of water has flowed under the bridge. Today, even entry-level models from Nokia, Sony-Ericsson, Motorola and others offer basic imaging capabilities and some are also offering video capture and/or viewing capabilities and image editing software.

The early camera phones were limited in their effectiveness due to the limited number of colours produced on a phone screen. The storage capacity was also limited, hampering their capabilities and the price, restrictive.

The Present

Times change and in a matter of four years, most phones are capable of capturing photos at a decent 640 x 480 resolution—good enough to be displayed on a phone screen and distributed electronically, at least. The display screen has also improved significantly and 65K colour screens are now the norm.

Storage problems that hampered early camera phones have also vanished thanks to the integration of higher built-in memory and the fact that most camera phones now support memory cards capable of storing gigabytes of data. With Bluetooth gaining popularity amongst these phones, exchanging these photos is no longer a painful process either. All in all, the picture is a rosy one!

The Future

The next imminent development around the corner is the introduction of 5-megapixel sensors in camera phones enabling you to take shots at much higher resolutions and rival a digital camera. Some pundits have even gone far enough to suggest that after killing the PDA prematurely, these devices may soon spell the end of the road for dedicated digital imaging devices. We're not so sure about that yet!



Chitkara Ambalika of Motorola agrees that the trend has caught up thanks to falling prices. "Camera phones were in their nascent stages till 2003 but have really caught up with the prices going down," she says. "With the whole mobile phone industry observing a downward trend in prices, it is likely that camera phones will follow these trends," she says discarding possibilities that the prices may fall further.

But the Indian market has emerged as one of the largest for these products. With growing penetration of cell phones, most companies are putting their best foot forward by introducing the latest and the best along with the rest of the world. "Indian consumers are aware of the latest trends and benefits offered by the growth in technology. They are also looking at value for money," says Ambalika, summing up the market scenario.

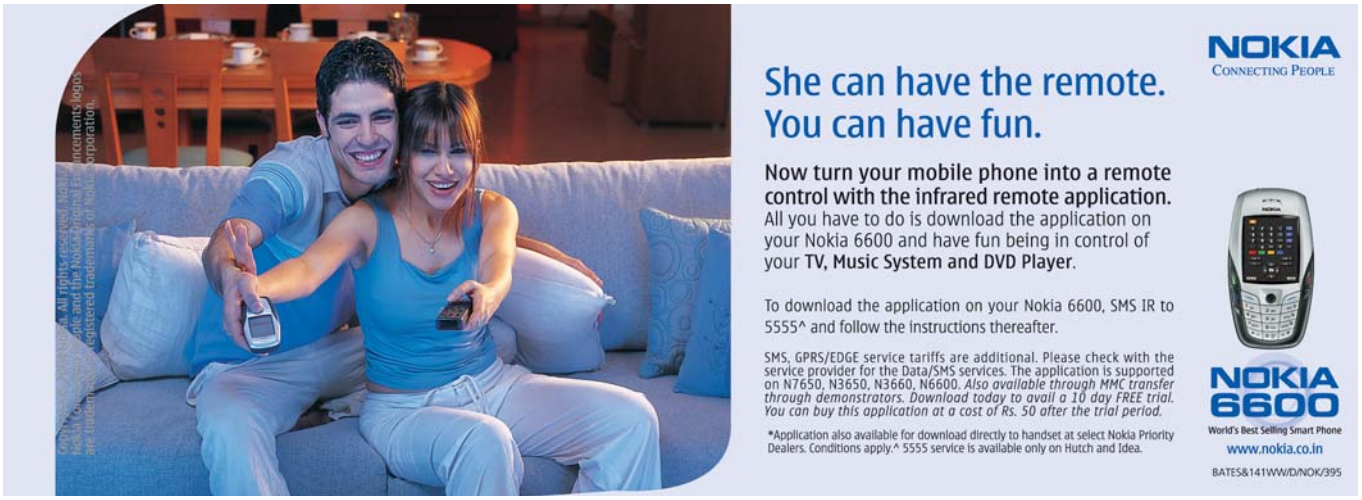
Asian markets, mainly India and China, are driving the overall mobile phone market given the fact that the number of first-time buyers here is higher than elsewhere. In Europe, US and Japan, the other major markets, it's more or a replacement or an upgradation market.

In the US, for example, camera phone penetration has reached 14 per cent of the total cell phone user base in just four years. In 2004, according to an In-Stat/MDR study, camera phone shipments around the world went up by 200 per cent.

According to the latest APRG demand data, camera phones will grow over 50 per cent on a compound annual (CAGR) basis through 2007. This, coupled with other options such as mobile gaming (which generated almost $26 million in 2004 in India), makes this a hot market to be in. Nokia, in

The Megapixel Wars

It all started with low resolution cameras in camera phones. But as is the case with the evolution of any device, cameras in these phones have become better with over the past year. Cameras in camera phones have in fact gained precedence over any other feature in the phone. One megapixel might well be the norm at the moment, but soon enough, the number will rise. Samsung has already announced a 5 megapixel phone but only for the Korean market. Manufacturers are also starting to bundle more capabilities such as Print Image Matching (PIM) to ensure quality of prints from the camera phone. While the rest of world is witnessing an increasing number of 1-plus megapixel phones being launched, those available currently also include video shooting capabilities. Sony Ericsson has it, Nokia has it, Motorola has it, Samsung definitely has it... do you?



fact has also decided to manufacture in India investing almost $100-150 million. In fact, the cellular subscriber base in India is growing thanks in part to the falling prices of handsets.

This Year

Year 2005 will perhaps bring together more features in a camera phone than before. Combined with PDA features, these tools would be powerful than ever before. One can't help but think the plight of non-camera phones given the constant onslaught they are facing.

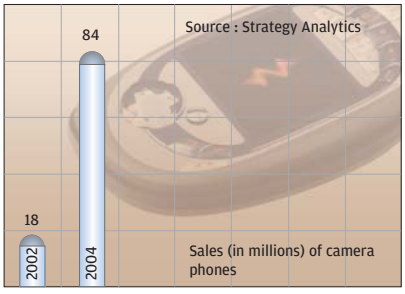
Convergence technology is at its best, as seen in a PDA camera phone



Prices of camera phones have fallen so drastically that anyone who might be considering buying a phone could well discount the existence of a phone that does not incorporate at least a 1-megapixel camera.

There are some, though, who believe that just camera phones won't be able to keep the interest of buyers alive. 3G phones will soon arrive and offer better communication opportunities and would be the new trend by the end of this year.

Convergence technology is at its best as seen in a PDA camera phone. The possibilities using a camera phone are simply endless. Some phones are already either offering shooting or viewing video clips and even editing of still photos albeit using third-party software. With ever-increasing screen sizes and resolution, the uses of a camera phone are widening.



These phones are also expanding capabilites to include web browsing using a browser, reading books, creating text documents and spreadsheets, synchronising data, exchanging notes and contacts and yes, making calls too!

Completing this loop are the local photo stores that are already offering prints from your camera phone for almost the same price as those from a digital camera or even a film camera would cost. It is already an established fact that electronic exchange of these photographs is definitely easier than of those shot with any other camera.

The critical image-quality barrier is all that remains to be conquered. If recent announcements are anything to go by, a 2- or 3-megapixel camera as the base model is not too far away. Pray tell why anyone should use any other medium for capturing quick images. This combined with printing capabilites, either at home or outside, are an ideal tool to capture photographs on the go either for reference or posterity!

2005, though, should be the year of PDA phones and 3G technology (if we finally get it off the ground, that is).

With companies such as PalmOne and HP introducing their products in India and with existing PDA or PDA capable phones like the Sony Ericsson P910, this would be the genre to watch out for. With most of these phones combining capbilities beyond just basic telephony, they are all set to become the next powerful communications tool. Are you with it? ■

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Your Camera Phone Should Have

- 1-plus megapixel camera (at least!)
- Zooming capability (even digital is fine)
- Video recording and/or viewing capability
- Expandable memory slot
- PDA features
- Bluetooth
- E-mailing capabilities





Multiple Personality Order

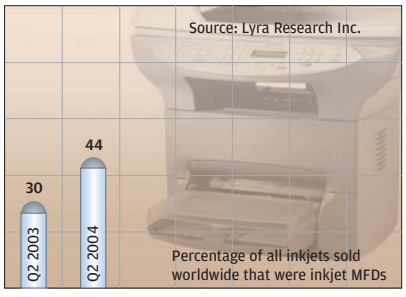
Multifunctional Devices or MFDs are fast becoming standard business tools. Do you already own one?

Preethi Chamikutty

As businesses move up the technology evolution scale, it is only natural that convergence makes it presence felt at the workplace. And more than one businessman would tell you that Multi-functional Devices (MFDs) are leading the way, at least in terms of hardware convergence.

Conventional research indicates that around 73 per cent of office work revolves around four tasks-printing, scanning, faxing and copying of documents. With such dependence on four tasks, it is logical that these devices enjoy such enormous popularity. The Indian peripherals market is now seeing an emergence of these products which is even eating into the traditional single function devices market. Experts peg the growth rate of the MFD market in 2005 at around 60-70 per cent.

The MFD market grew by a massive 160 per cent over the past 12 months, according to research group Inform, and colour inkjet models account for 85 per cent of the total MFD market. Little wonder, then, that printer manufacturers are flooding the market with new models.



What MFDs Offer Today

Space is a luxury not every office can afford. Hence consolidating three functions into a single device makes sense. The evolution of MFDs can be attributed to the demands of the customer in general.

Today almost all the companies in the running are trying to outdo each other. Inkjets still enjoy a larger market share compared to lasers, mainly due to pricing. The only way to compare print quality is to see the same photo reproduced on each MFD on the manufacturer's recommended paper stock. Inkjet printers are cheaper up front, but are more expensive to run than laser printers—the inkjet cartridges don't last as long and are also costly.

In the mid- to long-term, you will need to replace ink cartridges several times, so find out how much these will cost and how many pages they are expected to print. Most manufacturers quote cartridge life based on the number of prints with ink covering five per cent of each page.

Saving space is one of the main criteria in the minds of people buying MFDs. The higher-end versions tend to get very tall, but don't take up any more desk space than a smaller unit. Smaller models have to make compromises somewhere—so decide how important space considerations are to you. However, MFDs today sacrifice little by way of quality and performance the way their forebears did.

Corporate speak

HP, a leader in the printer and MFD market, feels the inkjet market is confined to professionals like lawyers, CAs, and other small businesses. "Although the initial cost maybe a little high, the cost per page comes down in the long run," says Rajiv Rao, market development manager, personal printing, imaging and printing group, Hewlett-Packard India.

Samir Shah, country category manager, shared printing and connectivity, imaging and printing group, Hewlett-Packard India says, "Today electronic transfer is the norm in most offices. So there is less of printing and more of copying. Nevertheless there is still demand and it is driven by the customer more than anybody else. We have introduced a new function in our MFDs known as "Digital Sending" that enables a printed document to be sent as an email just like you would send a fax.



"The percentage of growth in MFDs, in 2005, would be higher than that of the single-function devices." Prices of regular MFDs range between Rs 19,000 and Rs 1 lakh or more.

Lexmark, another market leader, offers features like scan-to-mail, desktop faxing, confidential printing, and LDAP access. "MFDs are certainly the future and with the total cost of ownership becoming a focus for most of the enterprises, MFDs can be looked at addressing this concern," says P G Kamath, general manager, Lexmark India.

Samsung's Vikram Singh Negi, country product manager, multifunction printers, claims that Samsung will, "produce small, faster, better MFDs this year with features such as Direct USB printing and scanning which will eliminate the need for a PC interface. Duplex Automatic Document Feeder features for double-sided copying to be introduced first time in a A4/Legal size MFP."

Samsung is also looking to enhance its Print Language—Samsung Printer Language (SPL) so as to minimise hardware requirement such as memory and high speed processor at the printer level and maximise productivity of the printer.

"Features such as Network Scanning, Scan to E-mail Direct will be introduced in the mid range MFPs (Rs 40,000 to Rs 60,000 machines). Wi-Fi Network Connectivity are also in the offing in mid- and high-end models being introduced from Q1 2005 onwards," says Negi.

Rajiv Singh, senior manager, product marketing, Canon India, says, "We plan to introduce auto-duplexing, two-way printing, USB 2.0 USB, compliance between speed and printing etc. We will also be introducing new technology system RAMs which will not be PC dependant."

Buying Tips

- ✓ Based on your usage pattern decide upon the type of warranty on offer
- ✓ Look for ease of use of the features offered
- ✓ An MFD should offer a handy interface
- ✓ Look for options of scalability and the ability of your MFD to last longer
- ✓ Keep in mind the maintenance and running cost of the unit
- ✓ End users should look for features such as cost, size and total cost of the consumables
- ✓ Enterprises should look at the ROI, cost per print, maintenance and ability to share over the network feature
- ✓ Also important are good duty cycle and a robust design

What The Customers Want

Customers still make the rules. Here's what a few have to say. Anant Gupta owns a publishing house and owns an HP Inkjet MFD. "I purchased this unit around two years back and it is still enough for my needs. I would nevertheless like to see an improvement on the data transmission speed front. The one that I have currently is not good enough."



How Does An MFD Work?

Most MFD units comprise a printer unit, a scanner unit, a fax unit and a copier. Almost all the MFDs will have these four functions, some may include a memory card reader. It is, however, not possible to use any two functions at the same time—except for high-end MFDs that support multitasking. The dual functions that a high-end MFD can perform are either fax and print or print and scan. It is quite difficult to have any other combinations.

Let's try and understand each function of printing, scanning, copying and faxing and try to understand how an MFD unit works.

Inkjet Printers

An inkjet printer generally has two cartridges—one colour and another black. These cartridges have slots through which electricity is supplied to the head of the cartridge. The head receives current from both left and right side, which charges it. Once charged the ink within the cartridge is thrown out in the form of a drop and may either burst or simply be deposited on the paper. The lesser the picolitre of the drop the finer is the quality of printout.

Laserjet Printers

Unlike the inkjet, laserjets do not have cartridges but drums. These drums consist of a toner and a laser point. Once data is received by the PCB , it is transferred via the laser tip and written onto the drum. The drum and toner are both charged oppositely. Now when a paper passes between the drum and the toner they are attracted to each other because of this negative charge and the characters written on the drum is transferred from the drum to the paper. Next, the developer helps the characters to be adsorbed on the paper and the final result is obtained in the form of a printout.

Scanners

Initially whatever was scanned had to be transferred to the computer as a soft copy and then a print taken. Now, however with MFDs a direct printout can be obtained. Flatbed scanners have a light running beneath the transparent surface on which the material to be scanned is kept. The cover is also generally white in colour so that it reflects the light back. The characters printed on the page have light falling on it from beneath the scanner bed. When this light hits the character an image of it is reproduced on the paper in the tray and a hard copy of the scanned material is obtained. So now with MFDs the trouble of making a soft copy and then taking a print out is eliminated.

Faxing

Faxing involves transmission of data over telephone lines. This involves conversion of analog signals to digital and vice-versa. Rather than the output being in the form of voice it is in the form of data in a fax.

Thus, when you ask an MFD to print you know what happens. Most corporates are not really bothered about the cost difference between an independent unit and a MFD. One of the major constraints in most MFDs is that they can perform only single tasks at a time and the high end MFD's price runs into lakhs of rupee which works as a deterrent.

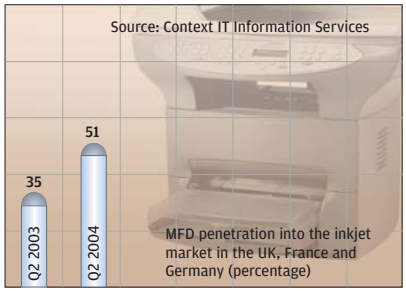


HP 4410 owner John Fernandes, a trader in chemicals, says "I print nearly 30-40 invoices a week."

Niraj Garg from Cyberpark India, New Delhi, owns an HP 5510 and Laser P380. An IT trader specialising in corporate and retail businesses, Garg is a heavy-duty MFD user. The 5510 is shared by him and two more users whereas the Laser P380 has about 10-11 users configured.

He prints 200 copies per month on the 5510 and 2000 cpm on the Laser P380. "Both products are very good and I do not have any complaints. Yes, I would like to see the prices of these fall though," says Garg.

Rajiv Soni, an LIC agent uses HP 4110, "Computers and technology related to it are my hobby. I use my MFD for sending and receiving fax to and from clients. I would most certainly like to purchase any new and better products coming in the market. I also do a lot of scanning, so with my current system I cannot scan thick books. So that's a problem, would like to see some improvement there", says Soni.



Coming Soon...

A major hindarance in MFD penetration has been customer awareness. Customers in India are yet to realise the strong value proposition of MFDs. Though vendors are trying their best to increase awareness the message has been slow in percolation. The inertia of a hesitancy in adopting a new concept has been some hindrance. Inkjet is a technology will die in the coming few years.

Laser is the technology of the future with a number of inherent customer benefits like quality, lower cost, etc. Globally MFDs are bringing in a huge change in terms of the way enterprise business is run.

MFDs, the way we see them today, have only emerged in the last few of years and prices have fallen drastically, as the category itself gets bigger. Initially the challenge was to create awareness of the multiple uses this product would likely have towards cutting the total cost of ownership and in providing value for money. A few years ago, their costs may have been prohibitive, but today entry level MFDs are available for as low as Rs 15,000.

Earlier there were limited products on offer, and perhaps a handful of players catering to all the consumers be it the end user, SoHo, SMBs or large corporates. Today the entry of MFDs as the new offering has created a buzz in the corporate market, and players are trying to position the products aggressively. One could say that new opportunities lead to newer markets and newer uses for the same product category. ■

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Shoot At Will

Recurring costs become a non-entity with digital cameras and give you the freedom to shoot as much as you like

Ram Mohan Rao

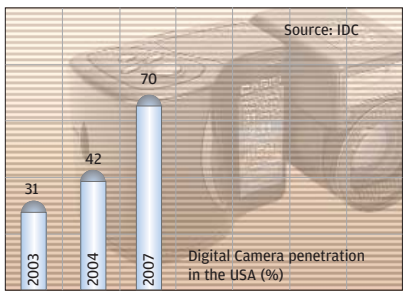
Film is on its way out, worldwide. Although a Rs 1,000 point-and-click film camera may still seem tempting as a temporary solution, there is now no excuse for not getting a digital camera.

Amongst the many things that make digital cameras attractive is the fact that you can experiment with your photographs, taking multiple clicks of the same scene from different angles—and then later see which one turned out best, since you have no film to lose! There is also no wait involved when you want to take a look at your photographs—you can see them instantly, or on your computer monitor. And then there's the question of portability of photographs—how much easier is it to share photos shot with a digital camera than with a film camera?

Picture quality and price used to be the drawbacks to digicams; now, with prices falling and megapixel ratings increasing, these, too, have already begun to vanish.

Digital Camera Trends

It was not too long ago that 2-megapixel cameras were the most happening products on the market; however, within about two years, seven-megapixel cameras have begun to show up on store shelves.



Rapid developments in sensor technologies have given the necessary shot in the arm, and have brought about a megapixel race amongst manufacturers. "Megapixel" is the magic word: it is used by manufacturers to attract consumers.

The perception amongst consumers is that the higher the megapixel rating of the camera, the better it is. While that is not entirely true, it is true that higher-megapixel cameras are generally better because of the additional features packed into them.

Digital technology is also gaining a good foothold in the professional digital camera category. Professional photographers used to shy away from digital cameras, since according to them, digital cameras lacked the depth in the output that a film camera could produce.

But all this has changed with the introduction of high-end digital cameras with large sensors and featuring some state-of-the-art technologies. The acceptance of digital cameras amongst professionals has increased manifold.

The most prominent feature that dictates the buying of a digital camera is the size of the sensor, given in megapixels. Today a good entry-level digital camera will have at least a 4-megapixel sensor. Slightly higher-end models will sport 6 to 7 megapixels, and will be capable of taking shots at much higher resolutions. This one parameter dictates the momentum of digital camera sales.

A higher-capacity sensor does not necessarily mean a bulky camera. A digital camera small enough to fit into your pocket can employ a 7-megapixel sensor or higher, for example, the

Sony DSC-P150. These little cameras capable of delivering exceptional photographs are in great demand.

Optical zoom, when coupled with a good CCD sensor, can bring about terrific results. Generally, most mid-range digital cameras provide a 3X or 4X optical zoom feature; however, there are certain cameras that have optical zoom of 10X to 12X—for example, the Panasonic DMC-FZ20. Moreover, to negate the effects of shake, these cameras are provided with optical stabilising systems.

Small LCD viewfinders with better legibility in direct sunlight are gaining popularity in mid-range digital cameras. You may or may not get an EVF (electronic view finder), but it definitely saves quite a lot of battery life.

Batteries are the bane of electronic devices, and no matter how good the battery life of your camera, always bank on an extra pack of batteries. Low-end digital cameras generally require AA-size alkaline batteries, whereas mid-range cameras come with rechargeable batteries and also allow use of standard AA-size cells. High-end digital cameras depend upon custom-designed batteries.

The recent trend amongst manufacturers is to provide number of presets on a camera such as Night shot, Fireworks, Landscape, etc. They help in one-touch configuring of settings.

Trends 2005

The digital camera market leaders are Sony, Kodak, Canon, Olympus, Fuji, HP, and Nikon. As an indicator of who the leaders really are, in Q3 of 2004, shipments of consumer digital cameras in the US were so: Sony was 1 million, closely followed by Kodak at 990,000. Canon did 800,000 shipments, and Olympus was fourth at 585,000.

Consider the US market for a while. When it comes to the growing popularity of digicams, the figures speak for themselves. Sales of digicams in the US in 2004 were 24 million, up from 17 million in 2003. Dollar sales of digicams in the US for in 2004 were $8 billion, up from $5.7 billion in 2003. (Source: IDC)

Two-fifths of homes in the US have a digital camera, and this figure will go up to 70 per cent by end of 2007.

You can expect sales figures to go up for quite a few years to come. Kodak, for example, makes most of its revenue in India through film cameras today, mostly because of prices like Rs 1,000 that basic point-and-shoot cameras are available for. This will change this year as digicam penetration grows.

In China, digicam sales were up by 280 per cent in Q2 2004, to 606,000 units. Sales value for Q2 grew 213.2 per cent, to 1.26 billion Yuan (Rs 668 crore) (Source: CCID (China Center of Information Industry Development) Consulting)

Britain is a slightly different story: only 18 per cent of Britons have digital cameras. A total of 12.5 million digicams were sold in the UK last year, compared with 12.1 million film cameras. This means that in Britain, film is only just being shown the way out.

Online Services And Sharing



According to InfoTrends/CAP Ventures, 33 per cent of US households with digital cameras were expected to become members of an online photo service in 2004. Digital photographers primarily use online photo services to share their photos, and an increasing number of consumers are uploading more images to share, print, and store. The forecast reports that online print prices are as much as 50 per cent lower than they were just two years ago.

Photofinishing revenues in the U.S. grew approximately 34 per cent between 2003 and 2004. On a worldwide basis, revenue is forecasted to increase at a compound annual growth rate of 41 per cent through 2008.

IDC said 28 per cent of digital camera owners share their pictures over the Internet.

The Scene In India

Ashwini Aggarwal, country marketing manager, consumer segment, imaging and printing group, Hewlett-Packard India, says, "The digicam market in India has been growing rapidly. In 2003, we sold 119,000 cameras, and in 2004, the number of units sold was 197,000. In 2005, we plan to sell 325,000 units (pan-India figures).



More than the camera, it's adoption of the concept we're targeting. Consumers are beginning to realise the ease with which pictures can be captured and printed out. Thanks to digicams, passport-size snaps are available on the spot. We also bundle digicams with photo printers."

HP digicams are available at a price range of Rs 8,500 to Rs 40,000.



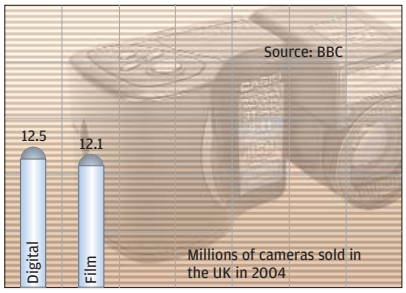
Digit asked Kodak what the major trends in digital photography would be in 2005. According to Richard Fleming, business manager, south Asia, consumer and professional imaging group, Kodak, 2004 was a very important year for the industry as a whole:

"In retrospect, the year saw the myths around using a digital camera diminishing to a large extent. Also, digital cameras are looked at not only as an attractive gift option, but also for personal use—as very good quality entry-level cameras are now available for as low as Rs 6,000 to Rs 7,000."

The major trends in the coming year driving the industry will be as follows, as also indicated by IDC in its half-yearly report:

- Better pricing across the category
- Enhancement of features with entry-level moving to higher mega pixels
- Digital camera becoming a common lifestyle accessory in larger cities
- Digital cameras and home printers offering a new experience and option to customers

About the evolution of the digital photography market, we were told that IDC had estimated a market size growth of around 68 per cent for 2004. This category has been one of the largest growing one in the digital products segment. With prices of digital cameras coming down year after year, and with possible reduction in import duties, digital cameras are becoming very accessible as "objects of desire." Both digital capture and output is expected to see a good market from the consumer and business segments who are looking for seamless imaging solutions.



"The introduction of a bundled digital camera, Kodak EasyShare CX 7330 with the Kodak EasyShare Printer Dock—has received good response. Basically, the market is driven by affordability and ease of use. Kodak digicams offer both these in addition to unsurpassed picture quality, incorporating the exclusive Kodak Colour Science image processing chip.

"The Kodak EasyShare system, with its one touch simplicity and ability to deliver quality prints, is driving digital camera household penetration.

"Kodak has always believed in the philosophy of ease of use and simplicity, as conveyed by its founder in the popular slogan, 'You press the button, we do the rest.'

"We will continue to bring in newer cameras in all the categories. We have already launched a five-megapixel camera with a 10X optical zoom with SLR camera-like features—DX 7590. We are also in the process of marketing a new lifestyle camera—LS 755—also a five-megapixel camera with a 3X optical zoom which is not only sleek and stylish but also has a very large 2.5-inch high resolution display for accurate previewing and reviewing of pictures."

We asked Lawrence Gibson, an Indian photography enthusiast based in Saudi Arabia, about what he'd like to see for digicams in 2005. Gibson has owned a Canon Powershot A80 for two years now. He opines that film still has its appeal, and that film cameras produce sharper results. As for digicam pricing, he says that prices are very low as they are—and that they probably won't fall too much now.

However, he still would like to see more features at lower prices in 2005, if that is possible. When we asked Gibson what features he would like to see in digital cameras, he says, "There needs to be more bundled software - for example, software to work with red-eye correction and such. Also, digicams need to get easier to use."

Yes, apart from price, it's all about ease of use. ■

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Broad Band!

If your dial-up connection is the story of the tortoise that loses, brace yourself for the hare that wins

Urmila Rane

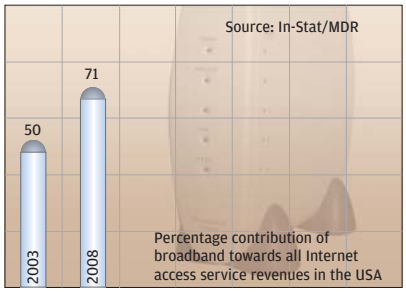
You know how it is. You dial-up connection sucks. Your throughput rate, on a very very good day, is 40 Kbps. Your friends who use a CDMA phone to connect to the Net get around twice that speed, and your friends in the US and Europe get around 100 times that speed on a bad day. Sigh!

Dial-up is still the commonest way to access the Internet in India even today. Even if "broadband" has been around for some time now, speeds have been pathetic if the service is priced low, and if you want high speeds, you had to pay through your nose. Result? Broadband never even took off even if there was huge demand from both corporates and individuals alike.

Today

Cut to 20 December, 2004. India's largest fixed-line telecommunications companies MTNL and BSNL announce that both will provide connection speeds of a minimum of 256 Kbps at just Rs 500 per month starting January 15 from the existing Rs 3,000, effectively cutting down your Internet access costs by a sixth.

So is it time to say that broadband has finally arrived? Going by the frenetic pace at which every telecom company worth its salt is getting into the broadband arena, it sure would seem so!



The government, too, has realised the importance of broadband, and has actively delicensed the 2.4 to 2.48 GHz band for low-power outdoor use. Simultaneously, the Department of Telecommunication (DoT), in its new broadband policy released on 14 October, 2004, defined broadband as Internet connection speed at a minimum of 256 Kbps, up from the regular "up to 128 Kbps" speeds given by leading Internet service providers in the country. This means that no ISP can advertise its services as broadband if download speeds are below 256 Kbps.

It was about time. Take these figures. While there were 123 million broadband connections by 2004 worldwide, India had only 1.2 lakh. Of the 123 million, the United States has 29 million, China 19 million, Japan 16 million, South Korea 12 million and Canada 5 million. Evidently, India has a long way to go. And the Indian user would want that journey to begin fast. Really fast.

That journey could well begin now. If both BSNL and MTNL live up to their 256-Kbps-at-Rs 500-a-month promise, broadband use could see a sudden surge even if many would say the scenario should have played out a long time ago.

What You Can Expect In 2005

MTNL will be launching its new Rs 500-a-month scheme in Delhi and Mumbai on January 15, while BSNL will launch it in Kolkata, Bangalore, Chennai and Hyderabad the same day.

Says Sandeep Kolwadkar, deputy general manager, business development, BSNL: "Our priority is to provide broadband services this year at affordable prices. For this we have invested Rs 600 crore in 198 cities across India. We have implemented copper loop access technology along with other technologies. We possess a huge

amount of domestic and international bandwidth, and this will allow us to launch several broadband applications this year. The plan is also to expand network by utilising the already-existing network of cable operators."

What The Biggies Are Doing

VSNL (now owned by Tata Group) has tied up with Cisco to deploy a Metro Ethernet solution for its Tata Indicom Broadband Services brand that will initially cover eight cities in India. It recently acquired telecom biggie Tyco's global network, and combined with its previous acquisition of Dishnet (a local broadband service provider) and the laying of a submarine cable link between Singapore and Chennai, VSNL has its sights set not only in India, but also the rest of the world. What this means for us is that the era of real broadband is not far. This year is just the catalyst one would expect.



Tata Indicom's biggest rival—Reliance Infocomm—is not sitting idle, and has partially kicked off its services. Says a company spokesperson: "We will launch our broadband services for home users in the first quarter of 2005."

Last year, Reliance acquired Flag, a company that has one of the biggest fibre optic cable networks in the world. While Reliance's broadband services to corporates at speeds of up to 100 Mbps has already commenced, the home segment with improved speeds is expected to 'go live' early this year.

In an interview to *Digit* (November 2004), Reliance Infocomm chairman Mukesh Ambani said: "We want to change the socio-economic landscape of India. Broadband has the capability to do that. We have already networked 5000 cities in India with 1.2 lakh km of fibre optic cable. We will probably enter the home segment at similar speeds as the corporates."

Types of Broadband Technologies

Broadband Provider	Wireless
Applogic Broadband	Cable and xDSL (Digital Subscriber Line)
Bharti BT	Fiber Optic
BSES Telecom	Copper
BSNL-MTNL	Cable
Capital Technologies	ADSL
Dishnet DSL	ADSL
Hathway Cable &	Cable
Datacom	Cable
In2Cable	Ethernet
Reliance	Wireless
Satyam Infoway Sigma Online	Leased Lines (Cables and Wireless to be introduced)
Spectranet	Cable, DSL, IP VPN, Leased lines with connectivity options
Touchtel	DSL, Radio Ethernet
Wipro Net	Copper, Fibre optics, Wireless
Zeenext	Cable

Ask The ISP

- ☑ What broadband technology is being used?
- ☑ What are the installation and monthly access fees?
- ☑ At what speed is it being offered? Is there a limit to the downloads?
- ☑ What hardware/software will be provided?
- ☑ What type of technical assistance is offered and when is it available?
- ☑ What are the terms and conditions of the contract and the acceptable user policy?

Another big player, Bharti Broadband (the parent company of cellular service provider Airtel), has launched Networkthree, which employs a network architecture comprising fibre broadband, satellite broadband and Internet and mobile data/GPRS for its broadband services.

Meanwhile, unlike other broadband providers that use cables to deliver their services, Sify offers dedicated broadband access using a technology called "fixed wireless". This is done in partnership with cable operators who have special devices called "subscriber-units" attached to their buildings that communicate signals with Sify base stations, and which are transmitted to customers via cables.

What The Users Want

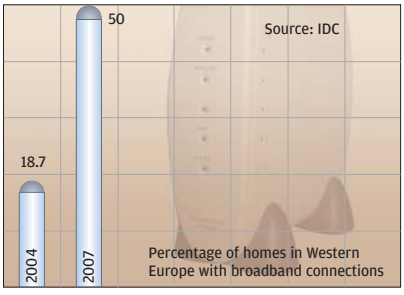
Most of the demand for pure broadband Internet access comes from urban areas, while most of the demand for broadband in the rural areas is for applications like telemedicine.

While there are many who would avail of broadband services only if the prices are brought down, there are some like Thane (Maharashtra) resident Vijayendra Bhoir. Says he, "Cost is no barrier for me provided the service is good and I can use it for interesting applications."

Others like Mumbai resident and computer applications student Abhishek Pagare feel cost is the prime issue. "An ideal combination would be maximum bandwidth at minimal prices. But seriously, imagine if broadband prices were comparable to those of dial-up or even cheaper. I guess in the long run, broadband service providers can work out equivalent or cheaper usage plans than dial-ups."

What Can Broadband Do?

Broadband, for many, is just fast Internet. In a manner of speaking, that is correct. However, applications like e-commerce, high-speed data transfer, video-conferencing and telemedicine, online gaming, video-on-demand, streaming music, and virtual offices are regular broadband applications.



Broadband, therefore, is not just a concept, it is an economy booster. Mobile phones are another target of broadband applications where news-on-the-move, high speed data transfer and e-mail are now regular. ■

readersletters@thinkdigit.com



DVD Writers

First the floppy, then the CD and now, the DVD. Offering oodles more space, the DVD is set to rule the roost

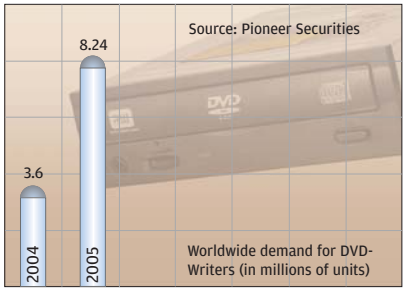
Ram Mohan Rao

The first DVD player was released in the US market in March 1997. Sony released their first commercial DVD player in April 1997. Since then, the number of DVD players sold in the US has risen to more than 85,00,000, while more than 1,22,00,000 DVDs have been sold.

The acceptability of DVD as the most preferred storage media on this side of the planet is slowly but surely picking up—with good reason. DVD-ROM drives are fast becoming regular devices in PCs, and computer users as well as DVD movie enthusiasts are aware of the fact that DVD writers not only allow you to back up data, but also copy movie DVDs.

Why DVD?

Say you need to take a large backup, and say your options are a new large hard disk, a DVD-Writer or a tape drive. Investing in a new hard drive may look feasible, but suffers from the portability angle. A tape drive can be very expensive for a SoHo business.



And this leaves only the DVD-Writer. Commonly available DVD media in the market today costs around Rs 120, while a DVD-Writer costs approximately Rs 5,000. The costs involved in purchasing a tape drive and cartridges may be too much for a SoHo business, leave alone a home.

This is why the DVD comes out tops. While offering more than six times the storage space of a CD, it is also very affordable now. Yes, it does take some time for writing data on to a DVD, but this is better than juggling seven CDs around one after the other.

The Format Wars

Buying a DVD writer is just a matter of minutes. However, buying the right one will need some research from your side. First up, let us clear the confusion among the various formats of DVD media available in the market.

The DVD-R/RW format was developed by Pioneer and released back in 1997. However, they faced various compatibility issues.

The DVD-R format is further split into DVD-R (A) (Authoring) and DVD-R (G) (General) formats. The difference is the laser used to write on them. DVD-R (A) and the DVD-R (G) are not compatible with each other: DVD-R (A) disks are not recordable in DVD-R (G) drives and vice-versa.

In addition, the capacities of these disks vary according to format. DVD-R (A) disks have



> **Overall prices of DVD media is expected to come down**
>
> R Manikandan, LG

a capacity of 3.95 GB, and DVD-R (G) disks are available in capacities of 4.7GB.

The DVD+R/RW format is relatively new - it became available worldwide only in late 2001.The DVD+R made its appearance in only in mid 2002.

DVD-R/RW and DVD+R/RW media are not compatible with each other. You cannot write DVD-R/RW disks in DVD+R/RW drives and vice versa. This can be quite a hassle and hence manufacturers have come out with dual format DVD drives, which can write to either type of media.

DVD-R media get written at a lower speed than DVD+R media. The theoretical limit for both these type of media is 16X, and a select few DVD+R/RW drives have already reached the limit whereas the DVD-R format is yet to do so. Another reason that makes DVD-R/RW look bad is the finalisation property when writing a disk. Say you want to write a video DVD comprising different clips.

In the case of a DVD-RW disk, you will need to finalise the DVD (marking the lead-in and lead-out) before you can use it on a standalone DVD player. For a DVD+RW disk, this need not be done—it will be compatible with a standard DVD player. This is the DVD+RW VR (DVD+RW Video Recording) feature. DVD-R/RW and DVD+R/RW are compatible with 85 per cent of stand-alone DVD video players.



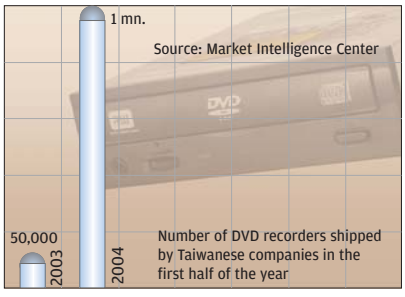
The Dual-Layer Format

All DVD media available in the market are limited to single layer single sided mode (DVD-5) and can hold up to 4.7 GB of data. Some manufacturers sell dual-sided single layered media (DVD-10), but this is a fast disappearing species since the same amount of data can fit on a single-sided dual layered DVD-9 disk.

Dual layered media has not been available for the general users until now; however, Philips and Mitsubishi Kagaku Media have developed the DVD+R/RW dual layered media meant for general users. Not to be left behind, Pioneer has released the DVD-R dual layer format for general users, continuing the format wars.

Dual-layer media is still in its infancy since DVD writers that can write on dual layered media cost more than the usual dual-format DVD writers do. Similarly, dual layered media is scarce worldwide and still not freely available in the local market. Another factor is that only the DVD+R/RW format is available in the dual layer format, for now.

For the purists who would rather opt for a dual-format, dual-layer DVD writer there still may be some time to go before you can actually lay your hands on one.



Trends

The market for DVD-Writers is exploding. The average selling price of DVD recorders was expected to fall by as much as 50 per cent in late 2004 as Taiwanese shipments of DVD recorders increased sharply, a government-backed market research firm in Taipei said. Nomura Securities estimated that the global



DVD recorder market would reach $4.6 billion in 2004, while Pioneer estimates global demand to more than double in 2005 to 8.24 million units from a forecast of 3.6 million units for 2004.

Many users quote compatibility issues—a result of the format wars—as one of the problems they face when making a buying decision. Naturally, all-format recorders, which can record to all DVD media, are the answer.

Says R Manikandan of LG on the major trends in DVDs in 2005: “DVDs will become very popular in 2005. Overall Prices of DVD media is expected to come down owing to volumes spiralling upwards. “DVD writers will become the most popular drive in the market,” he said. “LG offers the world's only all-format DVD-Writer. It is the fastest DVD-Writer at 16X, and can support all the formats in the world.”

The last word comes from *Ashmit Shah*, a student in Mumbai. He says about his hard disk crash: “My hard disk crashed on me all of a sudden, the way they always seem to do. What in the world would I have done if I had not taken a backup of all my data onto DVDs?”

The point here is that it had taken just about a dozen DVDs and a few hours for the entire backup. ■

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The Year Of The Laptop

Until 2004, the notebook was a luxury. This year, get ready for the laptop boom!

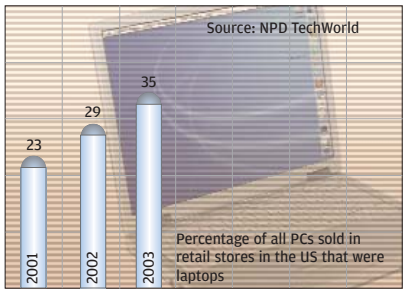
Preethi Chamikutty

Take these figures released recently by research firm IDC: Globally, laptops have now reached 24 per cent of overall PC sales, up from 20 per cent last year, and 18 per cent the year before that. IDC is bullish about laptop sales in India too. According to its figures, the laptop market grew 65 per cent in 2003 in revenue terms. IDC's report adds that with these figures, it will not be long before laptops will form a quarter of all PC sales.

WHAT TO EXPECT IN 2005

Lightweight Notebooks

It is the year to be practical as well as extravagant. Laptops are normally used by executives who travel regularly. Therefore, industry experts say that the emphasis would be on reducing the weight of the laptop, making it easy to carry around. The heavier laptops, on the other hand, would be addressed to the less weight-conscious home-user segment. The heavier laptops, which are normally priced much lower than their lightweight counterparts and have similar utility, make up for around 80 per cent of the consumer laptop market.



Wide Screens

This year will also see an increased emphasis on wide screens; the prime reason being laptops are no longer used just for business purposes but also as entertainment units. Although screen sizes and resolutions have improved dramatically in the last six to eight months, prices have not dropped in the same proportion as PCs. Says Devita Saraf, executive director (marketing), Zenith Computers: "Laptop prices have dropped, but not dramatically. This is primarily because prices of LCD displays have remained either high or stable."

Battery Life

A regular pique of laptop users is battery life. Charging is a pain; indeed in most cases impossible. Imagine your battery giving up in the middle of an important presentation. This year, however, would see a dramatic rise in battery life. "Newly-launched models should have at least seven to eight hours of battery life," says Rajiev Grover, country category manager, consumer portables, Hewlett Packard India.

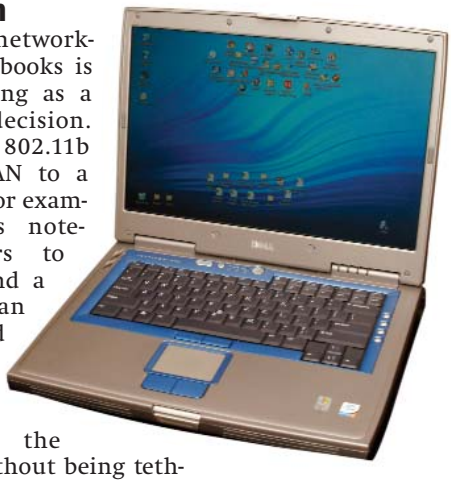
Price

Several factors may contribute to the upswing in the demand for notebooks in 2005, but the biggest factor would still be price. Component prices are expected to drop this year. Grover

says prices of flat-panel displays and memory will fall, leading to an overall drop in prices of entry-level notebooks. This will also mean that higher-end models will have more features at the same price. Says Grover: "The notebook market has exploded in more ways than one. In this fiscal, we have seen three-digit growth rates in terms of units sold and around 70 per cent in terms of revenue. The Indian executive has realised that being productive at all times is important, and mobility is one thing that is making it possible. A laptop is a business necessity today."

He also adds: "We are trying to be as affordable as possible. Besides since India will be a signatory to the WTO agreement, it is possible that Customs Duty may be relaxed further this year on IT products. I guess the market will mainly focus on weight of the unit, wide-screen technology, connectivity to various devices, and entertainment options."

The Wireless Paradigm

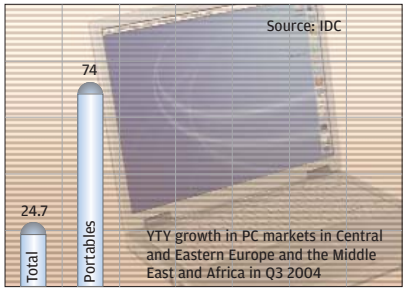


Wireless networking in notebooks is fast emerging as a buying decision. Adding 802.11b wireless LAN to a notebook, for example, allows notebook users to move around a home or an office and maintain a connection to the Internet without being tethered to a cable. Many notebook makers such as IBM and Dell are pre-installing antennas that allow people to take advantage of 802.11b by purchasing an add-in radio card for their notebook. Apple Computer was one of the first to integrate 802.11b support into its portables.

Says R Raghu, senior product manager, Acer India: "We plan to bring in the SignalUp technology to laptops this year to facilitate the wireless LAN environment. We will also focus on Centrino and Mobile Celeron product lines in 2005." He adds that notebooks have become lighter and thinner recently, and have reached the power of desktops in all respects.

Yeh Dil Maange More

Users say they expect more and more features this year in their laptops. Says software consultant Deepak Shah, who currently uses an IBM Pensar 380, but will be investing in a new notebook this year: "When I purchased the IBM, my needs were limited. But today I work in Visual Basic, Oracle, SQL, etc. Naturally, I require a high-end system. I would prefer to buy notebooks that have worldwide warranty." Shah does not mind paying up to Rs 1.5 lakh for his notebook, but wants an auto backup facility, wireless LAN, considerable battery life and a lightweight unit.



Buying Tips

- ☑ Centrino recommended
- ☑ In Centrino, rather in Pentium M processor, look for 2 MB cache instead of 1 MB
- ☑ In WLAN, 802.11g has higher data transfer rate (55 Mbps) when compared with 802.11b (11 Mbps)
- ☑ Insist on a Combo Drive
- ☑ Ensure the laptop is lightweight. Bulky laptops can lead to health issues for travelling executives
- ☑ Look for the optimal number of USB ports
- ☑ Insist on at least a 40 GB hard drive
- ☑ Widescreen or Wide Aspect Ratio based Laptops when you want better screen quality
- ☑ Ensure your brand is reputable, and has an internationally-known service network

Zenith's Saraf says that her company will have more interactive features in its laptops in 2005. "Zenith's new VU range of laptops has an in-built camera and more features. Newer technologies such as the Intel's Centrino Mobile will save laptops from price wars, though."

Anshuman Purohit, planning manager, Madison India, owns an Acer Travelmate. "I use it to surf the Net and listen to music. But I would like to have an IBM machine that is Bluetooth-enabled, is lightweight, and has a data recovery system." On the other hand, graphic designer Kausarali Bastawala, is looking specifically to buying a high-end Sony notebook, with a configuration that will appeal to graphic designers. "It should have enormous RAM, a high-end graphics card, good colour resolution, and high processing speed." For this, he does not mind paying up to Rs 1.5 lakh.

Mariam Samuel, meanwhile, uses his laptop to check email wherever he is; to keep a backup of his work, and to run high-end applications such as Autocad and Corel Draw. But he says he will buy a new machine only towards the end of the year. But his wishlist includes a small built-in printer, "so I can give clients printouts immediately".

The World Over

IDC figures indicate that worldwide laptop sales grew 11.6 per cent in 2002, compared to 2.7 per cent growth in PC sales with HP and Dell leading the pack with market shares of 17 and 16 per cent respectively. But importantly, more than 90 per cent of all new laptops would be Wi-Fi ready by end-2005, up from 35 per cent by end-2003.

It does not really matter, though, how much the market swings this year with respect to notebooks. Just as the desktop has become a part of life, notebooks are fast becoming another way of life for the executive as well as the home user.■

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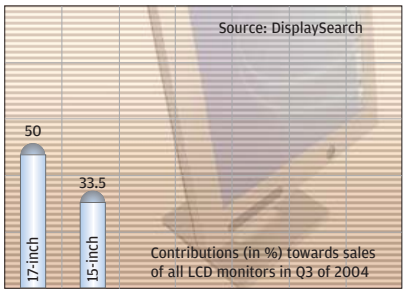
Go Flat Out

LCD monitors have gained in popularity across the world but are yet to catch on in India. Will 2005 be their year?

Aditya Kuber

Let's begin with the basics. LCD displays utilise two sheets of polarising material with a liquid crystal solution between them. An electric current passed through the liquid causes the crystals to align so that light cannot pass through them. Each crystal, therefore, is like a shutter, either allowing light to pass through or blocking the light.

Since computers made their way into our homes and offices, CRT (Cathode Ray Tube) displays have been the norm. In fact, even today in India, they remain the top choice. Can Liquid Crystal Display (LCD) monitors that have grown in popularity across the world take a foothold in India?



Those With It

The gaming community has driven, to a large extent, recent advances in personal computing, and most high-end consumer components today are targeted at gamers. LCD monitors became a hot commodity due to the slim profile and light weight, making them ideal for carrying and transport. However, one of the longest issues dodging LCD monitors is their inability to achieve a low latency, fast pixel response time, which is responsible for the ghosting effect.

CRT monitors have a sub-1 millisecond response time, and that's why there has been a slower adoption of LCDs for entertainment and gaming purposes. LCD panels with 12ms refresh rate have just begun to take over as the performance models, and manufacturers have already announced their 8ms line-ups. BenQ seems to have beaten the competition as they debuted, in November 2004, the world's first 8ms LCD monitor.

Says LG India's Deputy GM (Sales and Marketing), IT Products, R Manikandan, "LCDs will never replace CRT monitors in a price-sensitive market like India. When CRTs are available at half the cost of the LCD, it will take sime time for the latter to make inroads into the home segment."

Hot Or Not?

It has been four years since LCD panels entered the mainstream computer display

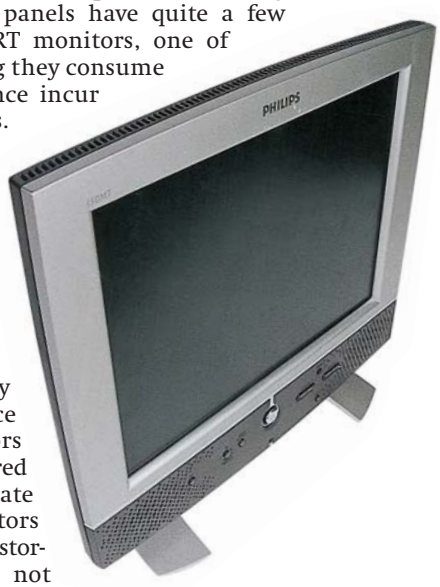
market in India but till date, thanks to price constrraints, remain out of reach for the consumer. Ashish Bakshi, country head, BenQ India, who also manufacture LCD monitors, "Currently, in India, the LCD monitor is viewed as an aspiration for individuals and a necessity for BPOs and other MNCs thanks to the response time. LCD monitors will eventually gain popularity in the top 10 commercial cities of India. Further, with the home segment gaining momentum, we believe that companies will now focus more on innovation in terms of aesthetics, response time and also the price to iron out the problems."

A recent Gartner study reveals that China's share of Asia/Pacific original design manufacturer (ODM) revenue from notebook PCs, motherboards, LCD monitors and optical disk drive production is increasing. It will rise from 57 per cent in 2003 to 84 per cent in 2008.

Big companies have already set up plants in India for indigenous production of LCD monitors to cut on the export cost

Why LCD?

Contrary to belief and despite the existing price barrier, LCD panels have quite a few advantages over CRT monitors, one of the main ones being they consume less power and hence incur lower running costs.



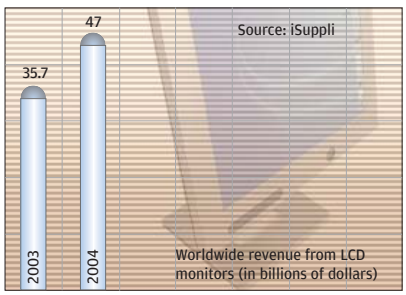
Secondly, they are more forgiving on the eyes in a well-lit room and are your best companions for long periods of time and fatigue-free working.

Evidently, they take up less space than CRT monitors and are the preferred choice in corporate offices. LCD monitors are also relatively distortion-free and are not plagued by convergence and other distortions that are a commonplace with CRT monitors.

Dhananjay Shah, director, Pure View, a display company predicts that LCDs will replace CRTs in India, in a little over two years. "Timing is key," he says, pointing out that LCD prices are likely to fall towards the middle of next year. "This is primarily because this is an evolving technology and with newer products like plasma displays entering the market, LCD prices will definitely be slashed."

Internationally, LCD prices fell like never before in 2004, driven mostly by the surplus generated due to low sales.

However, this wasn't reflected in the Indian market largely due to the import duties levied on such products. Needless to say, this fall in prices fuelled sales, resulting in larger volumes and demand going up.



"Worldwide, LCD monitor prices have fallen in the last few months largely due to the drop in panel pricing. However, this has currently stabilised to a certain extent," says Bakshi.

In India, though, the sole reason for poor penetration of LCD panels is the high prices. Despite the recent fall in prices, LCD monitors continue to cost more than what the consumer is ready to pay.

A 14-inch LCD monitor, for example, costs about Rs 12,000 whereas a 15-inch retails for about Rs 13,500. Compare this with the prices for CRT monitors at Rs 4,500 for a 15-inch and Rs 6,500 for a 17-inch and the puzzle is solved. CRT monitors will continue to hold sway in the Indian market till such time that the price difference is vast.

However, over the past two years, 14- and 15-inch monitors priced around Rs 5,500 and 6,700 were staple products for dealers and manufacturers alike. Priced upwards of Rs 8,500, 17-inch monitors were the occasional treat while 19- and 21-inch monitors, at Rs 16,000-plus were the festive feast! A price drop around December 2003 pulled down the price of 17-inch monitors to Rs 6,500 and eventually to Rs 5,500 in 2004 resulting in good sales. In fact, they sold so well, that by the end of 2004 there was an acute shortage of 17-inch monitors in the market!

The Future

Over the last two years, prices of LCD panels have gone down significantly. If this trend continues this year, LCD panels might just have a chance to go past CRT monitors but only if the price drop resembles that of the 17-inch monitor. As Ashish Bakshi sums it up, "The LCD revolution is not on us yet, but we are at the threshold on one for sure."

The market for LCD monitors in India was estimated to increase to one lakh units by 2003, a five-fold increase from 2002. This is expected to jump further to four lakh units by 2004 according to industry sources.

The big companies have already set up plants in India for indigenous production of LCD monitors to cut on the export cost.

Sales of LCD monitors will rise globally, overtaking revenue from sales of conventional CRT (cathode ray tube) monitors, according to IDC. The predominant LCD size now is the 15-inch screen, but the market will shift to 17-inch screens soon. The switch over is expected to take place in 2005. ■

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Flatter The Better?

- They take up less space on your desk
- Consume less power
- Better value for money
- Lesser distortion than CRT monitors
- Easier on the eyes
- LCD monitors do have low refresh rates
- Prices still restrictive



Clicked Now? Print Now!

Digital camera sales are surging. Naturally, photo printers would, too

Meera Vankipuram

In 1972, when it was first introduced, the Polaroid instant camera created waves—it symbolised the birth of an instant world that was to envelope our lives later. Click a photo, and it would be with you in a matter of minutes, sometimes even seconds as the pace of technology quickened. It was a fascinating era. When the '90s dawned, instant photos were a part of life, and we never even gave them a second look.

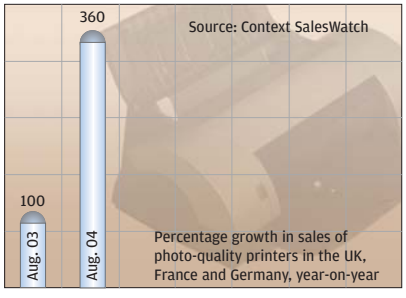
So why should we be so excited about photo printers?

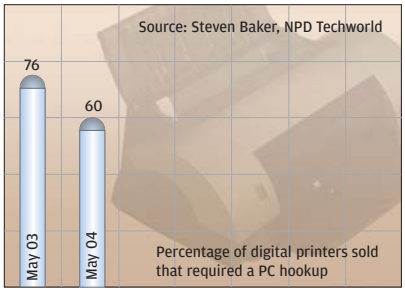
If the 1990s was the era of advancing film camera technologies, the new millennium has brought with it advances in digital technologies, and a 5-megapixel digital camera is commonplace. As digital cameras see a surge in usage because they give convenience and do away with the currently-ubiquitous, friendly neighbourhood photo studio, it is only natural that photo printers become the logical, even standard, peripheral.

A photo printer, in a manner of speaking, is what the Polaroid camera was—it gives you instant prints of your digital photos. Say goodbye to PCs as the via media for storing pictures and then printing using your loyal inkjet.

The Kodak printer dock, for instance. It is the latest in the series of several innovations by leading companies such as Kodak, Canon, Epson and HP. These devices just about made their appearance in 2004, but digital camera usage surges this year, photo printers would too.

According to an IDC report, the first half of 2004-05 saw the printer market grow by 10 per cent in volumes over the same period last year. IDC India reported that the Indian market for photo printers grossed Rs 24 crore in FY 2002-03, the top three vendors being HP, Epson and Canon. IDC figures forecast that sale of photo printers will cross 60,000 this year compared to around half that amount in 2004.





What is a Photo Printer?

A photo printer is a type of inkjet printer designed specially to print high quality digital photos on photo paper. Some photo printers are equipped with digital media readers to print pictures even without a PC.

In India, until 2004, the home segment had not even begun to take off, and vendors typically targetted the studio lab segment. Industry estimates place photo printer sales at over 10 percent of inkjets sold in India. Of course, the sale of digicams is closely linked with photo printers, along with accessories such as cartridges and paper.

What to Expect in 2005

Ashwini Aggarwal, country marketing manager (consumer), Imaging and Printing Group, Hewlett Packard India Sales, confirms that HP will focus its photo printers for the small and medium business segment this year. Says he: "There are subtle differences between camera prints and between those a photo printer offers, but the gap is constantly narrowing." HP is also targeting studios, where photo printers have enabled faster processing of passport size prints.

HP is also investing in marketing campaigns to encourage its digicam customers to print their photos at home or at work.

Epson is the latest entrant in the photo printer market, and says that sales of photo printers have been brisk (around 2000 a month until December 2004). Suresh Govindachari, senior business manager (consumer products), Epson, admits that photo printers will never completely replace ordinary camera prints. "But we are looking at the more than one lakh photo studios in the smaller, semi-urban centres apart from the city-based studios. Habit conversion is key to our campaign. People realise slowly that the main advantage of photo printers is the convenience factor-prints are made available immediately, and the cost per print is much lower than camera prints."

He adds: "Colour restoration on old, faded prints is another major area where photo printers score. Many people have sentimental attachment towards old photographs. They want black and white prints converted to colour or blown up to bigger sizes."

Epson's flagship piece is the RX 630, which among other things can print directly from the negative or a digicam memory card.

Canon's success in the photo printer segment has largely ridden the digicam / handheld wave, and will continue that way this year. But they are slightly more bullish than Epson. "Soon," says Kumar Soni, assistant manager (product marketing), Canon, "all printers sold will be photo printers." Currently photo printers for the home segment are sold in the price range of Rs 8000 to Rs 25,000. Canon will also aggressively market high-end photo printers for the business domain.

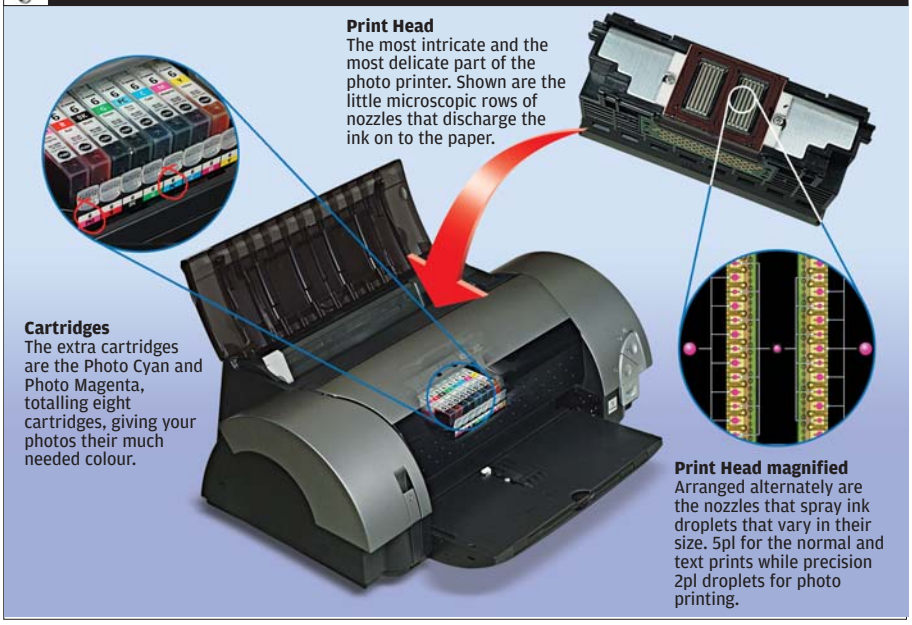
To increase public usage of its consumer products in India, Canon recently launched "Canon Digiphoto Zones," in collaboration with photo studios across the country. These zones would act as 'one-stop shops' for instant processing of rolls, and as retail outlets for Canon products. Canon will be supplying these studios with digital cameras, film scanners, photo printers and other related accessories.

Mumbai resident and amateur photographer Y P Kaushal recently purchased a Canon Pixma IP 3000, to "make bulk prints in the convenience of my home." Although it's not exactly cost-effective for home users, photo printers score when it comes to ease of use, and saves the consumer a trip to the photo studio.

It is this convenience factor that will make adoption of photo printers a common thing in 2005.■

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How A Photo Printer Works



Who Needs Photo Printers?



Photo printers are available for home as well as for businesses. At home, they serve the purpose of having a photo lab as and when you need it. Borderless printing, which was not possible except in print labs is now possible at home. You can print in regular sizes, and also photo print on stickers and other media.

For businesses, a photo printer may be advantageous if you need good quality prints regularly. For example, if you need to send out a few exclusive, high-quality invites to some clients, you may find it difficult to get it done from your regular print shop. Photo printers can be useful for creative designers, architects and engineers; there are many applications, such as AutoCAD, which make a photo printer a very handy thing to have.



Get The Big Picture

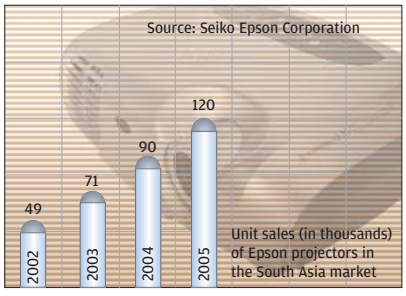
Projectors are set to go mass this year with both businesses and homes adopting them

Meera Venkipuram

It all started 18 months ago when prices of projectors started falling. The Indian market, like many of its south Asian counterparts, is extremely price sensitive, and projectors did not catch on in the market not because they were not good, but because they were expensive. Not anymore, though.

These days, educational institutions, business-small and big, and even home users (who want them for home entertainment systems) are lapping up projectors. Naturally, the price-fall has resulted in higher demand for both LCD and DLP systems, the two kinds of technologies used in projectors.

Studies indicate that between DLP (Digital Light Processing) and LCD (Liquid Crystal Display), DLP projectors remain intact after 2000 hours of viewing time, while LCD displays deteriorate-the light source necessarily has to be replaced.



LCD and DLP Explained

An LCD display is essentially electrically controlled light-polarising liquid trapped in cells between two transparent polarising sheets, placed perpendicular to each other. The cells possess electrical contacts that allow an electric field to be applied to the liquid inside. LCD ensures superior picture quality with minimum radiation.

DLP technology was originally developed by US-based IT products manufacturer Texas Instruments, though licenses are issued to several manufacturers to market products based on their chipsets.

In DLP projectors, images are created by microscopic mirrors laid out on a semiconductor chip, the Digital Micromirror Device (DMD). These mirrors spin rapidly to reflect



light through the lens. Single-chip DLP systems can display up to 16.7 million colours, whereas 3-chip DLP systems can display up to 35 trillion colours. DLP is generally believed to provide smoother images, better colour accuracy, have lower power consumption as well as higher contrast and brightness than LCD projectors.

Trends For Today And Tomorrow

Hewlett-Packard, a strong proponent of DLP technology, offers projectors priced between Rs 80,000 and Rs 3 lakh. Says Manu Sharma, country category manager, imaging products (imaging and printing group), Hewlett-Packard India, "In 2004, we sold nearly 26,000 units. The commercial market has shown a 40 per cent increase in sales in the past year. The trend will continue this year with newer models being launched on a regular basis. India is a good market to be in right now."

One reason HP continues to back DLP technology is that it feels that the Indian market is right for that kind of usage, where people do not have to bother too much about changing light sources.

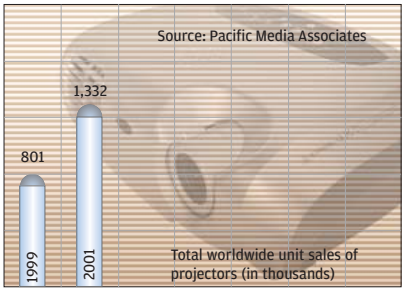
Epson is a leader in the number of patents in projector technology. Epson believes that because of its aggressive pricing policy (prices start at Rs 75,000); projectors will continue to grow this year, even if no new technologies are introduced. The focus will be on creating



lighter, sharper projectors. Says K Venkateshwaran, Epson's all-India product manager, "We will manage to easily sell 50 per cent higher than 2004, primarily because schools and other educational institutions, apart from corporates, are accepting the projector as an important tool."

Innovations within the segment include projectors with wireless capability and projectors with client and server-based networking capabilities-like the InFocus LP840 and LP850. Such projectors allow companies to monitor and use multiple projectors from a single PC, thus helping organisations share technology resources and also maximise usage time.

Although projectors are an integral part of corporate presentations, they are becoming increasingly popular as home theatre units. Says Ashutosh Parande, who has a





projector at home, "Projectors help me recreate the 'movie theatre experience' at home... I also get the kind of clarity and image quality that any high-end home entertainment system can offer. I think they will soon become a popular, cost effective solution for home users."

Weight

Projectors have been traditionally heavy and bulky; just like laptops. But, even this aspect is undergoing an overhaul and fast! This year, the several companies are focussing on this aspect as much as on increasing clarity of the image or other key features.

Price

The increase in projector usage can be attributed to one factor-price. This is a global phenomenon and India is no different. Says Sharma: "The proliferation of electronic media for teaching purposes and not just communication is another major reason for the increased acceptance of projectors. Today, they are an integral component of corporate presentations, classrooms, training centres and even home theatre systems."

Apart from customised solutions for SMBs, this year will also see projector solutions for laptops, tablet PCs (projectors with wireless capabilities), and for PDAs (projectors with thumb-drives to store PowerPoint presentations). "Our big focus this year is the mobile segment-we even have projectors that weigh less than 1 kg. Now wireless networkable products are in demand even in educational institutions," says Sharma.

Toshiba, another major player that retails both DLP and LCD projectors in India says the biggest boost for the projector market will come through government institutions, schools, colleges and management institutes. Says Virendra Rajput, zonal sales manager, Toshiba: "Maharashtra is one of the fastest growing regions because of the high rate of industrial growth. Even the home segment is now growing and I am guessing that for this year, our growth rate will be anywhere between 60 and 70 per cent."■

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Go Wirefree

Wireless solutions are beginning to pick up in India. Here is a lowdown on what options exist in order to go wirefree

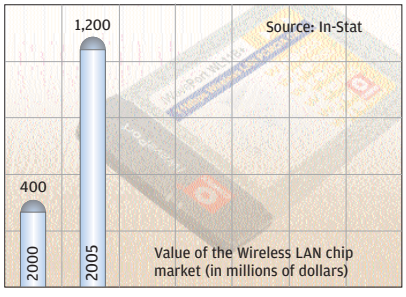
Ram Mohan Rao

Wireless devices are redefining the word "mobility." Laptops were the forerunners of the mobility theme, and wireless devices are taking it to the next level. The long-cherished dream of pervasive computing now feels closer to home.

While wireless devices were around long enough, it was only after the introduction of Intel's Centrino platform that it caught on to the imagination of mainstream industry bigwigs.

Intel's Centrino is a platform comprising of a CPU, a chipset and a wireless device, all bundled together in a nifty laptop. But there is more to the Centrino than just a laptop—it is a complete platform created from the ground up for mobile computing.

The wireless entity in this platform enables you to access your data anyplace and anytime, provided the right infrastructure is there. "Infrastructure" here denotes specific locations where you can connect wirelessly to a device connected to the Internet.



Such locations are called hotspots, and the device to which you connect are the access points. This complete eco-system, when ready, allows you to access your mails, data etc. from almost any place such as airports, bus stops, restaurants, your bed etc—and that, without messy wire connections.

On the software end, these devices automatically recognise each other's presence, and do the necessary settings required for smooth connection.

For setting up a wireless environment, access points, or APs as they are called, and PCMCIA / PCI cards are the most basic devices required. Depending upon the standards they employ, such devices are categorised as 802.11a, 802.11b and 802.11g.

Introduction To The 802.11 Standards

In 1997, the Institute of Electrical and Electronics Engineers (IEEE) created the first WLAN (wireless LAN) standard. They called it 802.11, after the name of the group that oversaw its development. Unfortunately, 802.11 supported a maximum bandwidth of only 2 Mbps, which was too slow for most applications.

802.11b

The IEEE expanded on 802.11 in July 1999, creating the 802.11b specification. 802.11b supports bandwidths of up to 11 Mbps, comparable to Ethernet.

802.11b uses the same radio signalling frequency—2.4 GHz—as the original 802.11 standard. Being an unregulated frequency, 802.11b devices can incur interference from microwave ovens, cordless phones, and other appliances using the 2.4 GHz range.

802.11a

When 802.11b was developed, the IEEE created a second extension to the 802.11 standard, called 802.11a. Due to its higher cost, 802.11a fits in well with the business market, whereas 802.11b serves the home market better.

802.11a supports a maximum bandwidth of up to 54 Mbps and signals in a regulated 5 GHz range. The higher frequency means the range of 802.11a is more limited. It also means 802.11a signals have more difficulty penetrating walls and other obstructions. Because 802.11a and 802.11b utilise different frequencies, the two technologies are incompatible with each other.

802.11g



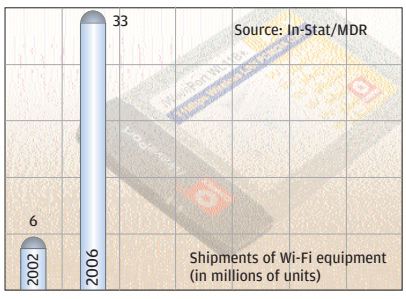
In 2002 and 2003, WLAN products supporting a new standard called 802.11g began to appear. 802.11g attempts to combine the best of both 802.11a and 802.11b. 802.11g supports bandwidths of up to 54 Mbps, and it uses the 2.4 GHz frequency for greater range. 802.11g is backwards compatible with 802.11b.

Trends

Anand Mehta, manager, new business areas development, D-Link India, says, "Wireless (WLAN) is primarily a platform for data transmission without use of a solid state media. Here one is essentially referring to IEEE 802.11 (a, b, g, i, etc.) standards.

"The WLAN market is to a large extent driven by the market for laptops and the penetration rate of laptops vs. desktops would define the extent to which WLANs are being deployed. Here in India, the penetration of PCs into homes is much lower compared to its presence in Business Environments. Simultaneously, it is most inconceivable to imagine that we would see a large number of homes having two PCs in India for some time. Hence, here, wireless deployments are mainly in enterprises.

"Other drivers for WLANs are scenarios like rented office space premises that may need to be shifted, or Cyber-Cafes, or deployments in the hospitality industry. Besides the above, there are a few niche applications such as RFID checks, industrial applications requiring the noting down of reading from various sensors, and real-time status monitoring in hospitals.



"VoIP, when it first came, was heralded as a system that would reduce the cost of communications drastically, and research organisations predicted/anticipated that all phones would be based on VoIP.

"This has happened only partially. True, VoIP has significantly helped in reduction of costs and thus prices, and enabled many smaller players to enter the normally very capital intensive area of telecom, yet on the other hand, one does not really find may telephone services being deployed completely on VoIP. One sees VoIP either being deployed by the carriers (on their backend) or being used through dial-up IP phones or used within organisations for their internal communications on VPNs or Leased Circuit Networks.

"VoIP over Wireless is essentially a tool to enable seamless deployments of VoIP within the organisation. It is a solution offered today by quite a few vendors and is constantly improving. One could even have these services deployed in homes as the last mile, but here one would need to have broadband as the base service on which one would deploy VoIP though Wireless.

"I envision VoIP over WLAN in the Indian context to be deployed only by enterprises till one sees a service provider deploy broadband in a really big way, and then at a later stage, maybe a couple of years down the line, extend this to VoIP.

"The main market barriers for VoWLAN are existing network infrastructure and operating devices. These will have to be replaced with VoWLAN-compliant products, affecting the current projected revenues of mobile phone carriers and telephone operators. This makes it difficult to predict if telecom service providers will encourage or hamper the deployment for VoWLAN.

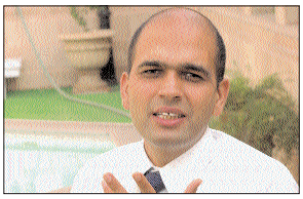
"WLAN will remain in use mostly for data transmission in the next two years. But usage of VoWLAN offshoots such as WiFi phones, PDAs or notebook PCs with built-in voice functions for home and office users will increase notably in 2006 (worldwide) and India should latch on in a year or two after this."

We asked Prashant Naik, a home PC enthusiast, about what he would like to see happening in the wireless arena in 2005. Here's what he had to say to us:

"I would like to have a wireless network in my house; I already have a Centrino notebook, and am planning to install an access point so that I can access cable Internet on by PC as well as my laptop; and my brother can do the same on his laptop.

"At present, the cost of an access point is a little high, at Rs 7,500. I'd like to buy one when it drops to around 2,500—the price of an external modem. I am expecting the price to fall this year as Centrino sales increase." ■

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130 Original Or Refilled? The debate rages on



132 Project Your Business Right



Imaging: Jayan Narayanan, Atul Deshmukh

Let's Meet... Online

Video-conferencing fast emerging as a cost-effective business communication tool

Meera Vankipuram

Since the invention of the telephone, and the birth of the Internet, no other technology offering has been more effective for multi-party communication. And then, the two met and video-conferencing happened.

Video-conferencing in its barest sense is a technology that allows people at different locations to communicate aural and visual data to each other, and more importantly, in real-time. Akin to a telephone call, once you connect to a person on the other end, the other party can be viewed on a video display unit (LCD or CRT). One can also transfer files simultaneously.

Video-conferencing is an ideal solution for conference calls, board meetings with members located at remote offices, video calls with clients in foreign countries as well as in private executive suites.

To set up a videoconference, one needs to have the right audio-visual (AV) equipment in place—a PC/monitor, camera, microphone, and a speaker. Today, vendors are developing integrated video-conferencing systems customised for specific business needs. You also require a good broadband connection—via satellite, if you can afford it, or over special IPs, or dedicated networks such as ISDN, or regular telephone lines. ISDN (Integrated Services Digital Network) is an increasingly popular solution for high-quality video-conferencing.

Video frame rate can vary from five to 30 frames per second (fps), depending on the quality of the Internet connection, the hardware, and the software used. ISDN transmits data at minimum rates of 128 Kbps per line and ensures dedicated bandwidth for smooth audio and video (15 to 30 fps).

IP-based video-conferencing solutions rely on the nature and quality of bandwidth provided by the ISP. Lags or delays that cause jerky videos or substandard audio quality are a result of the poor quality of Internet connections. Although Web-based conferencing solutions are expected to eventually replace ISDN as the medium of choice for video conferencing, ISDN is still widely recommended for its high quality.

Voice, Data And More

Apart from conventional video-conferencing solutions, most vendors offer Web conferencing solutions—Microsoft's Net Meeting software, for example, is a PC-based Web conferencing solution; audio conferencing solutions using a Public Switched Telephone Network (PSTN) or Voice over IP (VoIP), IP video conferencing (over ISDN), and streaming video can be used to create interactive presentations from your boardroom.

Apart from just the ability to communicate audio-visually, some vendors also provide customised tools for document transfer, creation of presentations and incorporation of various media such as AV clips, graphics, animations, etc, in real-time, during an AV session.

Good For Your Company?

Video-conferencing has made age-old corporate boardroom meetings a thing of the past. Access to requisite bandwidth is now easier than ever in India, at least for corporates.

Yugal Sharma, country manager, Polycom India, a company that facilitates video-conferencing, asserts that video-conferencing is one of the best solutions for remote meetings. Says Sharma, "Video- conferencing provides an excellent tool to improve communications with multiple sites within a business, or with other businesses. Also, in applications such as meetings, training, or services, which can all be enhanced through face-to-face communications, video-conferencing works best."

Businesses that operate in various nations also derive huge benefits from video-conferencing. "In the service sector, for instance, video-conferencing can enhance customer experience, improve operational efficiency and create significant savings in cost incurred on travel and time," says Sharma.

Noida-based Havell's India Ltd. is a multi-product electric engineering organisation specializing in solutions for low-voltage electrical requirements. Havell's India has offices across the country and uses video-conferencing solutions in twenty-four locations.



> **Video conferencing has enabled us to expand our market**
>
> **Vivek Khanna**
>
> General Manager, Havell's India

Says Vivek Khanna, general manager (IT and Finance) at Havell's, "We use video-conferencing for inter office communication, and for our marketing, financial and sales needs. Video-conferencing has enabled us expand our market. Employees in branch offices are also able to interact with dealers and can connect with senior management or product heads anytime, from anywhere."

Video-conferencing, in this case, serves as a tool to facilitate better communication with remote customers, partners and offices, thus enabling efficient business transactions.

On the flip side, although vendors claim to conduct inter-operability tests with their competitors (so as to not restrict the users to a particular brand), compatibility often becomes an issue. Both ends—the company and clients—may be forced to use similar equipment, which may not always be affordable.

Due to the exorbitant cost of video-conferencing equipment, some companies such as WebEx and Tata Telecom provide hardware and services to corporate

Setting Up A Video-conference Over An ISDN Line

STEP 1 Set up your workstation—a PC with a sound card, a set of speakers, a microphone, a web-cam with a video-capture card and relevant software, and a dedicated ISDN line

STEP 2 Download/purchase and install a video conferencing software such as Microsoft's LiveMeeting or WebEx Client (for PC and Mac users). Follow instructions to set up the software on your desktop. Ensure that the software on the client's end is compatible with yours

STEP 3 Set preferences such as speed, picture quality and sound quality. Select or add the client's ID from the video-conferencing program and dial his/her number. Once both sides are connected, you can share visual data.

To share audio data, you will require a telephone connection, along with an ISDN line for data transfer. But this is a rather tedious procedure and you not have access to a dedicated ISDN line.

Meeting Over A Chat Client

Standard chat software (MSN and Yahoo! Messenger, for example) can be used to conduct a Web conference over your local network or over the Internet. Although both audio and visual data transfer is enabled, the quality of the conference will depend on the bandwidth offered by your ISP.

Server-Based Solutions

Companies can also consider server-based AV transfer solutions such as Macromedia Flash Communication Server MX, Microsoft Live Meeting or



Convoq. These are server-based platforms that enable creation of interactive web-based AV applications like video-conferences, live broadcasts, and real-time collaboration applications. Data transfer is relatively secure as it is not over a public connection and is not a major security concern.

A Basic Video-conferencing Toolkit

- A PC monitor, LCD panel or desktop video-conferencing system, which is either portable or fixed, depending on the number of participants (conferences, classrooms, or presentations)
- Camera/Webcam with a video input connection. Multiple cameras may facilitate better coverage
- Microphones/speakers. A remote control could be used to control volume, and even camera settings, if required
- Codecs—Used for compressing and decompressing data, codecs can be software or hardware-based, or a combination of both. Slow codecs or low bandwidth can cause jerky images or lags in AV output.

and individual customers on rent. Clients can avail of the services at the offices of these providers or lease out hardware. Support personnel are also sent with the equipment to set up a conference call and ensure that the ISDN line is functioning.

Kiran Datar, COO, WebEx, which offers video-conferencing services across the five major metros, calls it a "one-stop shop for audio, Web, and video-conferencing solutions as well as Web casting services. It doesn't really make sense for some companies to purchase expensive conferencing hardware. Our clients, mostly corporates, either come to our studio and avail our services, or we transport our equipment to their offices. We provide cameras, equipment and video-conferencing services via an ISDN line. We charge depending on the duration of the call, services used, etc."



"...an excellent tool to improve communications within a business, or with other businesses
Yugal Sharma
Country Manager, Polycom India

Emerging Trends

In 2001, video-conferencing aided the world's first transatlantic tele-surgery—a surgeon in the US used a robot overseas to perform gall bladder surgery on a patient. Now, telemedicine has become a reality in several countries including ours, with hospitals such as the Apollo Group in Chennai (their telemedicine application 'Medintegra' helps doctors devise treatment regimes for patients in remote locations), and Wockhardt Hospital and Heart Institute, Bangalore (which enables doctors to monitor the vital parameters of patients admitted to their Intensive Cardiac Care Unit, in real-time, from anywhere in the world), to name a few.

On an average, the telemedicine networks in these hospitals charge between Rs 500 to Rs 600 per remote consultation. For the patient, however, telemedicine helps save on travel and lodging costs and high consultancy fees at specialised facilities. "Although Indian hospitals are showcasing video-conferencing-aided remote surgeries at exhibitions, it is yet to take off in a big way in India," says Arun Giri, senior manager (business development), Apollo Telemedicine Networking Foundation, Hyderabad.

When US forces attacked Afghanistan, television reporters used portable satellites and videophones to broadcast war footage live. Newscasters back home could converse live—complete with video—with reporters embedded within war zones.

E-learning, another rapidly evolving trend, involves proactive use of video-conferencing for "virtual classrooms." With increased quality of streaming video, and lesser lags or delays in transmission, interactive classrooms are now gaining popularity.

The Indian Institutes of Technology (IITs), for example, use video-conferencing to enable students in remote areas to pursue advanced courses in engineering. The courses (Embedded systems, Mobile computing, Signals and Systems are some of the subjects offered) cost anywhere between Rs 2,000 (for students/teachers) and Rs 10,000 (for working professionals). The biggest advantage of the IITs' distance education programme is that participants from remote centres have access to academic support, and can interact with faculty—students attending the lectures can ask questions and receive answers in real-time.

With more and more organisations implementing video-conferencing solutions to reduce travel costs, network better and increase efficiency, the conventional notion of a "board meeting" may soon give way to its virtual counterpart. ■

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Are Refilled Cartridges Good?

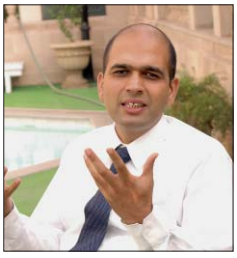
Should you purchase original print cartridges, or save costs by refilling them?

"Recycling cartridges could cost you more in the long run"

The first myth I would like to dispel is that all the work is done by the printer. No matter how good a printer may be, you need a quality print cartridge working together with it. An inkjet print cartridge is not just a container for ink. It packs in a whole lot of science. Also consider this: if a nozzle is exposed to air for more than a mere few seconds, it becomes clogged from crusted ink. "Capping" the nozzles is an HP innovation that reduces the amount of time they are exposed to air, thereby reducing clogged nozzles—an innovation that might not be found in lower-priced alternatives. For HP inkjet printers that use a flexible "wiper" blade to clean the nozzle plate, removing ink spray, ink crust and paper dust, the corresponding HP print cartridges are also designed to eject a small amount of ink on the wiper to obtain a "wet-wipe," thus helping to dislodge ink crusts.

The second myth is that all inks are the same. The truth is that not all inks are created equal. HP inks are designed from the ground up with unique ingredients and special manufacturing processes—not easily replicated without an imaging and printing R&D commitment of over $1 billion a year. HP patented inks, such as the latest HP Vivera Inks, are engineered to give customers the most vibrant and long-lasting colours—with fade resistance of over 100 years when using HP 6-ink printers and HP Premium Plus Photo Papers.

The truth about lower-priced alternatives is that they could cost customers more in the long run because of quality and reliability problems. Compared to leading worldwide remanufactured brands tested by QualityLogic, Inc., original HP black inkjet cartridges have been proven, on average, to be over nine times more reliable, and original HP colour inkjet print cartridges to be 50 times more so. Imagine the hassle, ink and paper wastage from reprints, and worse, possible damage to the printer that would require repairs and cause downtime. All these are hidden costs that customers should consider as part of the overall cost of printing—beyond the initial purchase price of a cartridge.



Raj Kumar Rishi, Country Manager, Supplies Business, Hewlett-Packard India Ltd.

The truth about lower-priced alternatives is that they could cost customers more in the long run because of quality and reliability problems

"If done correctly, recycling works. Think money and the environment"

HP is the largest player worldwide, with the maximum market share. Many HP cartridges say "Intended for single use only." Here's the truth, from an interview given by HP Senior Vice President Pradeep Jotwani to CNET News.com, dated 05/02/2003: "I think customers draw the line. Part of that choice is they can choose our original supplies... But there is a segment of the market that is cost-conscious that draws a different line. ... We consciously make sure that our cartridges are reusable and refillable." HP does put some limits on the practice, such as adding software that makes some of its cartridges unusable after a certain expiration date—either four-and-a-half years after manufacturing or two-and-a-half years after a cartridge is installed.

HP Limited Warranty Statement point no. A (4) states, "For HP printer products, the use of a non-HP ink cartridge or a refilled ink cartridge does not affect the warranty to the customer ..."



Praveen Khandelwal
Director,
Lipap Systems Private Limited

It is well known that many HP cartridges can be refilled up to seven to eight times, so obviously the "single use" statement is more to discourage people from recycling and does not mean that the cartridges cannot "actually" be refilled.

Can recycled cartridges really cause damage and lead to cancellation of warranties? Here's the truth. The inks available from internationally reputed manufacturers such as OCP GmbH, Germany, are formulated with the highest quality dyes, pigments and processes. Customers worldwide have been using these inks without problems. About the warranty: HP Limited Warranty Statement point no. A (4) states, "For HP printer products, the use of a non-HP ink cartridge or a refilled ink cartridge does *not* affect the warranty to the customer ... However, if *printer failure or damage* is attributable to the use of a non-HP or refilled ink cartridge, HP will charge its standard time and materials charges..." Can refilled or recycled cartridges reproduce the quality of a new cartridge? Yes and no. It all depends on where you get your supplies. Companies such as OCP GmbH guarantee their Pigment Inks for stability up to two years.

Cartridge parts are non-biodegradable. Ink powder contains harmful chemicals that can pollute the water and soil. The answer is recycling. On the whole, if done correctly, recycling works: it saves customers money, is good for the environment, and saves the country lots of foreign exchange.

As told to Ram Mohan Rao

Photographs: **Mexy Xavier, Jiten Gandhi**



Supersize Me!

If a picture can speak a thousand words, then a picture projected should scream! Go ahead and make your sales pitch heard using one of the 13 projectors we tested

Aliasgar Pardawala

In an environment where meetings are ritualistically conjured, for either presenting an idea or making a sales pitch, a projector is a regular guest. A projector is essential to any business. Are you using the right projector to convey your business ideas to colleagues and clients alike? Is your projector the right resolution for your conference room and does it have the correct lumen rating? What about the contrast ratio? Do you need to project on a wall or on cloth and what should the ideal screen size be when using a projector?

But we are getting ahead of ourselves. Chances are, you are reading this simply to learn what projector would be right for your needs and budget.

Let's take it from the top. You need a projector, whether for business or for home entertainment (nothing screams "home theatre" like a 300-inch screen!). First up, let us find out what you should look for in a projector. We will then take you through the various ones we tested, pointing out the pros and cons of each one, so you can make an informed buying decision. As we always do, we demystify the technicalities behind the technology.

What Should I Look For In A Projector?

We will stick to text and graphics as we take you through this section. The reason for this is simple: moving images do not need the level of detail and accuracy that a picture in a PowerPoint file or numbers within an Excel sheet require.

Technology: There is little to differentiate between an LCD and a DLP projector. Most people are likely to opt for a DLP solution because it is normally the smaller of the two and the images quality, especially where movies are involved, is slightly better.

Resolution: Resolution determines the sharpness and clarity of an image. The most common resolution is SVGA or 800x600 pixels. This is sufficient for most users and SVGA projectors are the cheapest available in the market.

Define your task here—if you are looking at meetings with nothing but presentation slides, SVGA is good enough. But if you are part of a sales team and find yourself pitching spreadsheets full of projected growth and earnings to your immediate superiors, you might want to look for an XGA or a 1,024x768 pixel projector. The larger number of pixels that an XGA solution affords will bring greater clarity to the small text so prevalent in a spreadsheet. You can take this forward: the finer the detailing on your presentation (maybe a CAD drawing?) the higher the resolution required and the greater the price you will pay. You thus have SXGA (1,280x1,024) and UXGA (1,600x1,200) solutions, the latter being a rare breed due to their high asking price.



HP vp6110

One final point to consider-a projector has a "native" resolution; the native resolution for an SVGA projector will be 800x600, for an SXGA unit 1,280x1024 and so on. Try and match the native resolution of your projector to the screen resolution of either your laptop or the PC from which you are sourcing the presentation. If the projector's native resolution is different from your computer's screen resolution, the output will appear fuzzy due to "scaling".

Brightness: This directly affects the size of the audience your projector can address. The brighter the projector the better and you should always go for the brightest unit you can afford. Define the nature of your presentation first. If your business showcases more videos or if you are using the projector at home, brightness loses important since these tasks are usually done in a dark room—and visibility is therefore not a problem. If, however, you are presenting to a group of note-takers or are teaching a workgroup, your room will need some sort of illumination, and so your projector's brightness comes to the fore. You can alleviate the need for bright units (since the associated cost increases with brightness) by employing reflecting screens for your projecting. Note that a typical wall is generally the worst place to project upon.

Finally, the size of your audience will also play a part. The larger your audience, the larger and brighter the projected image will need to be.

Brightness is measured in ANSI lumen or just lumen. An entry-level projector carries 1,000 lumen or less; as this rating increases, so does the price. A 3,000 lumen projector will classify as a high-end unit but a 12,000 lumen unit is not

Brightness	Usage
1,000 lumen or less	Make your presentation in a dark or dimly lit room
1,000 - 2,000 lumen	Suited for small classrooms or small presentation room
2,000 - 3,000 lumen	Suited for large rooms
3,000 lumen or more	Suited for large venues such as auditoriums and board rooms

How We Tested

Test Bed
The test bed for projectors consisted of an ACi Impression M11 laptop with a P IV 2.4 GHz processor running Windows XP Professional SP1. It had 512 MB of DDR SDRAM, and an ATI 9700 graphic processor. All the projectors were tested with Windows Display Properties set to 32-bit colour. The projector's native resolution as specified by the manufacturer was set before the tests were run.

Preparations
Before running the tests, parameters such as ambient light, distance of the projector from the screen, and the graphic chips used in the test bed were kept exactly the same for all projectors under review. Testing was done under controlled lighting with the distance from the screen set for optimal results, as specified in the users manual by the respective manufacturers. The screen we used measured 72x90 inches. The projector's distance from the screen was then adjusted for optimal results.

Features
Here, we noted feature sets such as brightness, contrast ratio, aspect ratio, optical zoom, manual focus, presence of various interfaces such as DVI, D-SUB, and so on and dimensions and weight. We also logged special features such as remotes that doubled as a presentation tool.

Presentation Test
In this test, we ran a PowerPoint presentation, which included a movie clip, regular text on a white background, black text on a coloured background, coloured text on a coloured background, and a graph. This test was run under the 'Presentation' mode and rest of the settings were left to factory defaults. This was to see how well the projector performed when used for presentations.

Animation Test
In this test, we ran a Flash file with animation and a clickable button. This test was to evaluate slow moving graphics, and also to check colour reproduction.

Movie Test
A DivX movie in 16:9 aspect ratio was run from the laptop to evaluate the 'Theatre' mode of the projector. The projector was set to an aspect ratio of 16:9, if the particular feature was available; otherwise it was left at native mode.

DisplayMate Video Edition
DisplayMate Video Edition was used to test the image quality of the projectors. The tests are designed to bring out problems like digital noise, moiré patterns, streaking, ghosting and colour accuracy deviations. Twenty-two test screens, which included focus matrix, colour purity and level shift were used to evaluate image quality.

How we awarded
The score noted from features, performance and from the price index was given importance as per as the specified category. An overall score out of 100 was then calculated. The product that scored the highest in the overall score was adjudged the winner of the Digit Best Buy Gold Award for its category. The runner-up received the Digit Best Buy Silver Award.

unheard of and is often employed in public places like nightclubs.

Weight: The portability of a projector becomes a point of concern if you are the travelling type. Anything more than two kg should generally be shunned. Some projectors come along with a card readers that can handle CF cards or SD cards—these let you carry your presentation on handy flash cards and you no longer need to lug your laptop along for the meeting! Another boon for the traveller is a wireless projector—an ideal mate for an Intel Centrino-based laptop or a similar WiFi match.

The factors listed above serve as a level-one filter when making a buying decision for a projector. Once you have decided on the right combination of the features and settled on a price, you will still have other choices to make (more, if you look to the grey market). To further refine your needs, consider these "bonus features", if you will:

Keystone correction: An image that is not completely square is a result of the keystone effect. This happens if your projector is not perpendicular to the screen upon which it projects, making for a trapezoidal image. Look for a projector that includes either a horizontal keystone correction feature (when projecting downward or upward) or a vertical one (when projecting sideways to a screen).

Contrast: The ratio between the lightest and the darkest areas of an image, the contrast should be at least 400:1. If you are projecting in a dark or dimly lit room, the contrast ratio will not be as high as when you are projecting in a well-lit room.

Video signals: Most projectors can handle both composite and S-Video transmissions. Some projectors can also handle "component" video, and these should be considered if your source or presentation supports it—as they give images of a higher quality. See box: "Demystifying Component Video" for more about this.

Computer ports: If you need to connect multiple sources to your projector, the unit must have the required number of ports. For example, if you plan to present alternating from your laptop and PC, the projector needs to have at least two video ports.



Infocus X2

Rear projection: If you want your projector to display from behind a screen, it should be capable of inverting the image before projecting. Look for rear-projecting units to give you this feature.

Zoom lens: A zoom lens alleviates the need to shift your projector to increase or decrease the size of a projected image. A projector with a 1.2X zoom lens will increase image size by 20 per cent. This is vital to fill a fixed screen size from a given distance.

To sum it all up: Resolution and brightness are vital; the more the better and the more expensive your purchase will be. Contrast ratio is also important, especially if your presentations happen in bright rooms.

With that aside, here is a look at some of the projectors officially available in the market today. To understand the testing process, please refer "How We Tested And Awarded".

Aspect Ratio Or Resolution?

Deciding between the aspect ratio and the resolution of a projector is a bit tricky. Presentations are always made with a 4:3 aspect ratio, whereas movies are to be enjoyed in the 16:9 ratio. As far as resolution goes, as a rule of thumb, higher is always better. Therefore, if the projector is meant for purely presentation purposes, one with an aspect ratio of 4:3 and a native resolution of SVGA or more is preferable.

However, if the projector will be also used for presenting corporate videos shot in the wide-angle format, your projector should also be capable of 16:9 display. If a projector has a native resolution of 1,024x768—which is a 4:3 ratio—when switched to 16:9, it will display images at 1,024x576. If this projector had a native aspect ratio of 16:9 with a resolution of 1,024x576, switching it to 4:3 will give a smaller image of 768x576, and cost more than a native 4:3.

It is, therefore, better to buy a 4:3 aspect ratio projector that can also display 16:9 ratio frames.

Demystifying Component Video

The image captured by a video camera is in the RGB format. Passing the three colour signals separately will improve the image quality, but doing it without compression is a bad idea as it consumes lots of bandwidth. Component video solves this problem by compressing an RGB signal and delivering it to the projector.

The component signals communicate the luminance in an image and the colour information. Luminance is denoted by Y, whereas the other two signals, which are red and blue, are denoted by R-Y and B-Y. Since a projector already has luminance and red and blue colour information, it simply needs to fill the rest of the scene with green. So the green signal is not transmitted, saving on bandwidth.

A component video signal is denoted as YPbPr for an analogue and YCbCr for a digital connection. Most DVD players have a component video output.

DVD players and projectors that support it show colour-coded jacks on it. There are entry-level projectors in the market that take a component signal only through the 15-pin D-Sub connector found on the graphics card of a PC. If a DVD player is needed to be connected to such a projector, it will require a special D-Sub-to-three-RCA jack cable to project an image.

Desktop Projectors

A "desktop" projector is generally a large unit not designed to be portable. Of a total of nine brands in the market, we got a unit each—three were LCD models while the other six were DLP solutions. All of them were SVGA projectors with a 4:3 native aspect ratio (see box "Aspect Ratio or Resolution" for more on aspect ratio) while a few came with a selectable aspect ratio of 16:9. Their lumen rating ranged from 1,200 to 1,600, and contrast ratios ranged from 300:1 to 500:1.

What Did They Offer?

Since we set a cut-off price of Rs 1 lakh for this category, none of the XGA projectors made it to this section.

Image Size

The Acer PD113 alongside the Infocus X2 shared the highest lumen rating of 1,600. Both these models are DLP projectors and need 200 W for the lamp. From the three LCD projectors, the Sharp PG-B10S with 1,200 lumen (130 W for the lamp) and the Canon LV-S3 (160 W for the lamp) with 1,250 lumen, required a lot more power

How Big Is Big Enough?

The size of the screen that you will need to buy will depend upon multiple attributes of the projector: its native resolution, the minimum and maximum screen size that can be displayed by the projector, luminance, contrast ratio, where you will likely use it, and so on.

An SVGA projector with a luminance rating of 1,000 lumen needs a screen big enough to display the projected image (100 to 200-inch) from a particular distance. Although the projector will display a bigger image if moved back, note that the 1,000-lumen lamp will produce a duller image from a greater distance. After a certain distance, even the best quality screen won't have much light to reflect back. Therefore, make sure that your projector's lumen rating, contrast ratio, and the distance from which you will project, match closely.

The screen size will also depend on the size of the room. Normally, your audience should sit away from the screen at a distance at least twice the image size; any closer, and the image appear as a pixelated mess with visible artefacts. So for an image measuring 100-inch diagonal, the audience should be at least 16 to 18 feet away

than the Epson EMP-S1H, which has a lumen rating of 1,400 but needs only 132 W, making it the most efficient of the LCD lot.

That's not all! The Epson projects very viewable images measuring 330-inch, diagonal from a distance of 11.3 metres, with the 132 W lamp—an impressive feat. We then placed this projector at a distance of three metres from our screen and found that the Epson was bright enough in presentation mode with image size touching 100-inch on our 72x90-inch screen.

As mentioned earlier, DLPs are preferred for movies since their output is generally brighter than LCD projectors. Thus, you will find that most of these projectors come with a selectable aspect ratio of 16:9 for that home theatre movie experience. All projectors in this category offered 16:9, including the four LCD projectors.

Connectors

When it comes to watching movies, connecting your projector to your PC is not always the best option. Standalone DVD players are widely available and you will find yourself using either S-Video or RCA component connectors. Of course, your projector needs to be supportive.

All the projectors, except the Canon LV-S3, either had S-Video or RCA component connectors. Canon just had the D-Sub (for your computer) and a composite connector. Since a composite signal is a mix of colour and sync signals, it is not as good in quality as a component signal (which segregates signals).

Ease Of Use

Setting up a projector is an art! Some struggle to get a projector up, while others are masters at the task and are in demand during meetings and presentations. Of course, the design of the pegs that support the projector body and the ease with which they can be adjusted are vital.

In this task, the Sony VPL-ES2 is worthy of a mention. This was the only model that had motorised pegs that raised themselves when the unit was powered up. A user can also control the vertical tilt of the unit electronically from a menu or via a remote. The VPL-ES2 also had a lens cover which slid away when the unit was powered up and went back to protecting the lens when the unit was switched off—some very cool features that make remote operation easy.

This unit was by far the best designed projector of all, in terms of set up and adjustment, and placement connectors (which were on the right hand side). The knobs to adjust focus and zoom were also neatly placed on the right hand side, further easing setup.

While we are on the subject of ease of set up, we should also mention the Sharp PG-B10S. This was the only entry-level projector that had a "Lens Shift" feature. A tiny joystick beside the lens could be used to shift it vertically or horizontally. This helped us do away with the need to fidget with its pegs to get the image right.



Epson EMP-S1H

Remote Control

Remote controllers are a common add-on to a projector. However, a few of the projectors had remotes that doubled up as presentation tools and laser pointers. The Acer PD113 had one such remote which unshackled us from returning to the laptop for a slide change. This is a greatly appreciated feature. Its pointer function further lends flexibility to highlight important figures and areas on the screen without having to walk to the screen and block the image.

Presets

A preset mode is a zero-hassle way of setting up a projector. No need to play with the colour, brightness and contrast settings—just choose a preset and you are very likely set. Except for the Canon unit, everyone had at least three presets to choose from, the most common being Standard, Presentation and Cinema. Some models such as the Sharp PG-B10S and HP vp6110 also had 'Game' and 'Living Room' modes.

Size

Compact and lighter units with a decent feature-set and performance will always be preferred over bulky units offering similar or even slightly better performance. The Acer PD113 was very compact, just 9.2 cm in height and weighing a mere two kg. Its lens is placed well inside a cavity with a big rubber lens cap, which not only protects it from dust, but also from shocks and mechanical jerks. The Epson EMP-S1H had the largest body frame, and weighed 3.2 kg. However, it sported an elegant design that was sorely missed in the other projectors.

How Did They Perform?

As mentioned before, we concentrated on evaluating the textual quality of the projectors' output. For this, we used PowerPoint presentations employing slides with black text on white backgrounds, coloured text on coloured backgrounds, and graphs and animations. Refer to the box "How We Tested and Awarded" for more information.

Performance While Displaying Text

Handling Tips For Projectors

A projector is a costly piece of equipment. Even costlier is the running cost. Maintaining and handling it with care is very important. Here are a few tips:

- Handle a projector gently. Always remember that it has a lens and an electronic assembly within. A jolt can disrupt the assembly of the lens, which will result in barrel distortion and keystone aberrations
- Never switch-off the main power after switching off your projector. This is because an internal fan, which is needed to cool the lamp and associated electronics, rotates for at least a minute after powering down. This is needed to flush out hot air from the projector. Avoid disrupting the process
- To continue with the above point, never pack up a projector immediately after using it even if you have used it for a short time. Leave it in the open for some time, and let it vent heat
- Never twist a projector's cables, especially the data cables. Try to fold them in the manner in which they arrived. Needless twisting will damage the cords, which might result in malfunctioning
- Make sure you wrap a portable projector in a bubble bag before lugging it around

When we looked for crispness of text and contrast between black fonts and white background, we found that all the projectors were more or less the same, with very little visible difference. Some models such as the HP vp6110 and the Toshiba TDP-S20 lagged in contrast when the background wasn't completely white. The Epson, Canon, Sharp and Infocus, on the other hand, had good control on brightness and contrast, imparting clarity to the slides.

In the reverse text test (in 'Presentation' mode), the Sony VPL-ES2 and the Canon LV-S3 fared better than the other projectors including the DLPs. Here, yellow text on blue background was reproduced well by both Sony and Canon. The HP vp6110 was the only DLP projector to score high in this test. The rest couldn't reproduce the yellow as well. Same was the case with the slide with "radium" green colour text on a blue background. If your work includes a presentation or if you handle education-related slides with text on various coloured backgrounds, make sure you choose an LCD projector such as the Sony or the Canon; otherwise, when creating slides, use colours that don't appear saturated—such as black or purple on a yellow background.

Performance While Displaying Graphs

Our coloured 3D bar graph had two shades of blue and a light shade of green. The Acer PD113 and the BenQ PB6100 displayed a darker shade of what was projected. Moreover, the side surface of the 3D bars appeared black. This happened after we completely filled the screen with the graph, using PowerPoint's animation feature. The other projectors fared well in this colour reproduction test.



Canon LV-S3

Under our animation test, we looked for fluid animation, good colour reproduction and crispness of text. Here again, the Canon LV-S3 managed good scores. The HP vp6110, a DLP unit, fared equally well. The Infocus, Sharp and Acer, however, showcased issues—the colour shade appeared different under them and the text was therefore not easily readable.

Performance While Displaying Movies

1/2 pg V AD

Movie quality was tested under the 'Cinema' preset of the projectors. We used scenes shot in daylight and at night to gauge the performance, especially the details they produced (such as the bark of a tree, skin tones and whether a scene was overly dark, which results in to detail loss). In this test, the Toshiba TDP-S20 was better than the rest. It produced night scenes precisely and with good detail reproduction. Sony's was the only LCD projector to produce an image as good as Toshiba's.

Another worthy mention here is the Epson EMP-S1H-the one with the efficient lamp and the large projection size. It not only produced good details and skin tones but its bigger display allowed for a truly cinematic experience. That said, you will need to sit at least 20 to 25 feet away from the screen to get rid of the screen door effect: the screen door effect is the grid visible on a screen because of the space between two pixels. Remember that this is an SVGA projector, so it is spreading only 320,000 pixels over a 330-inch diagonal screen.



Toshiba TDP-S20

The HP vp6110 was a letdown in this test. The image produced at full zoom was no more than 60 to 65 inches and dark enough to blank out the night scene! Even the daylight scenes appeared dull and details were completely lost. This means that the presets on the HP vp6110 are no good.

DisplayMate Video Edition

The DisplayMate Video Edition test uses a set of visually brilliant slides, and the primary reason to use it here was to check the display of the projectors under extreme conditions.

When we looked for geometric accuracy and focusing, Acer, BenQ and HP did extremely well. These three, with their default settings, gave accurate geometry in horizontal and vertical bar resolutions with no visible moiré. The projected image was accurately focused throughout. The Toshiba TDP-S20 suffered in the focus matrix test and displayed prominent barrel distortion aberration. The problem was not specific to the piece tested—a replacement unit too showcased similar issues. The Epson was another one with poor results in the focus matrix test: images in corners were completely out of focus and remained that way even when we tried different modes.

Given its performance, the Acer PD113—a DLP-based projector—topped the charts in this category leaving behind Sony

When we looked for streaking and ghosting, purity of colour and level shift, the BenQ PB6100 and the HP vp6110 shared the top spot. With these models, there was no ghosting or visible white or black level shift at all. The units even managed to accurately differentiate between 16 grey levels of varying intensity. The Canon and Toshiba units had problems of white and black level shift, visible in the form of a red and a blue tinge where the bright and the dark areas met.

We also checked for screen uniformity and flicker. The Toshiba TDP-S20 and the Sharp PG-B10S displayed problems with screen uniformity: the projected screen was clearly dark on either side of the centre. The BenQ, HP and Infocus returned commendable results in this test. The Sharp unit showed a slight flicker. In the dark screen test, Sony and Sharp appeared brighter, and therefore, a distinct dark grey image was formed on the screen; the others did well too, projecting dark enough screens.

Total Cost of Lamp

The cost of a lamp is an important factor to be considered while purchasing a projector. Most projectors have a lamp life of 2,000 hours. A few, such as the Infocus, have a lamp life of 4,000 hours while the Sony and Toshiba units have a 3,000-hour lamp life. The cost of the Infocus lamp is high, at Rs 32,000. But if we calculate the per-hour cost, it comes to Rs 8, which is lower than the Rs 12.5 of the HP, Canon and Epson, whose lamps retail for Rs 25,000 and last 2,000 hours. The most affordable lamp in terms of per-hour rate, was that of the Sony. The lamp cost is Rs 17,990, the lowest in this category, and the per-hour cost of using the lamp comes out to Rs 6, which is half that of the Toshiba, HP, Canon or Epson.

And The Winners Are...

Given its performance, the Acer PD113—a DLP-based projector—topped the charts in this category, leaving behind Sony by a percentage point and a half. The Acer sported a good set of features, prime amongst them being a healthy 1,600 lumen brightness and a zoom ratio of 1.2:1. It also had a high image display size of

Jargon Buster

Anamorphic Lens: A lens that can project an aspect ratio different from the actual image ratio is called an Anamorphic Lens. Using such a lens, it is possible to project 16:9 aspect ratio images using a native 4:3 aspect ratio projector

ANSI Contrast Ratio: The ratio of the brightest white to the darkest black. Display devices supporting higher contrast ratio will be able to show much finer colour range and detail. ANSI Contrast is a method of measuring contrast by using 16 alternating white and black rectangles. The average output of light from white and black is divided to get the ANSI contrast ratio

Composite Video Signal: A signal which is a combination of colour information and horizontal and vertical sync signals is called a Composite Signal. Television signals are composite signals

Dichroic: A lens, typically used in projectors, separates white information from the red, green and blue light. Such a lens is called Dichroic. It does this by reflecting/refracting particular wavelengths of light

Keystone: When a projected image does not appear rectangular on the screen, the glitch is called Keystone. It usually happens when the projector is not perpendicular to the screen. It can be corrected by either mechanically shifting the lens or digitally correcting the image to make it look rectangular

Lens Shift: The ability to move the lens horizontally or vertically is called Lens Shift. Some entry-level projectors have a manual lens shift where the user can shift the lens using a small joystick located beside the display lens

330-inch diagonal, which is big enough to address an audience over 50. Movie results were very decent in both 4:3 and 16:9 aspect ratios. Moreover, the Acer sported a Picture-in-Picture mode, for when you need to showcase a movie presentation alongside the graphs. Acer's remote was also the best of the bunch with some great features that afford flexibility and style. To top it all up, the Acer asked for the lowest price in this category: Rs 64,990. The Acer PD113 is our 'Best Buy' Gold winner.



Acer PD113

The Sony VPL-ES2, our 'Best Buy' Silver winner, is an LCD projector. It has an impressive design; setting it up is fast and painless and using it is a breeze. Alongside its preset modes, the Sony allows for three user-configurable modes, which is a nice plus, indeed. As mentioned earlier, the working cost of the Sony is much less than that of any other projector we evaluated: the lamp costs just Rs 6 per hour. This means that even if you make a one-hour presentation per day, five days a week, your cost won't exceed Rs 30 per month.



Sony VPL-ES2

MOBILE PROJECTORS

Anything that weighed less than two kg was considered a mobile projector. A total of four such units made it to this category. All four models that made it here were SVGA and except for the Panasonic, an LCD-based model, the rest were DLP-based projectors.

What Did They Offer?

Being SVGA, all four offered the 800x600 resolution that their larger-sized brethren did. However, their lumen ratings were lower than the desktop models. These maxed out at 1,200 lumen for the BenQ PB2120. The same was not the case with the contrast ratio, though. This went as high as 400:1 for the tiny HP SB21. Thanks to the lower lumen rating, the lamp power consumption was well within 150 W for all units. The least hungry in terms of power was the HP sb21, with 120 W. The Panasonic, which was the lone LCD projector in this category, had a lamp that consumed 130 W—which was commendable, given that it was rated at 1,200 lumen.

The Panasonic and HP sb21 both claimed to produce 300-inch image size, quite a feat considering their size. The BenQ PB2120 was the lowest, able to project onto a 240-inch screen. All the models were native 4:3 aspect ratio projectors with an option to switch to 16:9. All four had either RCA or S-Video component inputs that allowed a direct connection to a DVD player.

Associated Cables

Data cables are vital for a portable projector. Maintenance gains paramount importance and improper storage or bundling can quickly lead to problems. Except for the HP sb21, which had an M1-A cable (DVI and USB combined), the others were bundled with a regular D-Sub cable. We found that the price of an M1-A cable was as high as Rs 7,000! We feel that replacing an M1-A cable with separate D-Sub and USB cables (along with a D-Sub to DVI converter, if needed) is a cheaper option.

Both the HP sb21 and the Sharp XR-1S had a mouse function coupled with their remote control to facilitate easy presentation. A USB interface was also included for easy plug-and-play usage. HP also had a laser pointer, adding to its overall functionality.



HP sb21

Presets

The Panasonic was the only model to have six presets, which included Living Room, Game and Dynamic apart from the usual ones. This makes the Panasonic almost hassle free—you do not need to spend too much time tweaking for the best picture quality.

Score Board

Brand	Model	Basic Specifications	Score (Out of 100)	Price (Rs)
Desktop Projectors				
Acer	PD113	DLP, 800x600, 1600 lumens, 2000:1 (Full on/Off), 4:3/16:9, 27.5"-330", 200W/2000H, 2Kg	67.88	64,999
BenQ	PB6100	DLP, 800x600, 1500 lumens, 2000:1 (Full on/Off), 4:3/16:9, 23.5"-230", 200W/2000H, 2.6Kg	62.82	69,900
Canon	LV-S3	LCD, 800x600, 1250 lumens, 300:1 (ANSI), 4:3/16:9, 34"-200" 160W/2000H, 2.2Kg	57.97	90,000
Epson	EMP-S1H	LCD, 800x600, 1400 lumens, 500:1 (ANSI), 4:3, 30"-300" 132W/2000H, 3.2Kg	61.97	80,000
HP	vp6110	DLP, 800x600, 1500 lumens, 2000:1 (Full on/Off), 4:3/16:9, 23.5"-230", 250W/2000H, 3Kg	56.15	80,000
Infocus	X2	DLP, 800x600, 1600 lumens, 2000:1 (Full on/Off), 4:3/16:9, 32.4"-259.2", 200W/4000H, 3.1Kg	63.16	70,000
Sharp	PG-B10S	LCD, 800x600, 1200 lumens, 350:1 (ANSI), 4:3/16:9, 40"-300" 130W/2000H, 2.7Kg	63.14	77,500
Sony	VPL-ES2	LCD, 800x600, 1500 lumens, 350:1 (ANSI), 4:3/16:9, 40"-300" 185W/3000H, 2.8Kg	66.77	79,990
Toshiba	TDP-S20	DLP, 800x600, 1400 lumens, 2000:1 (Full on/Off), 4:3/16:9, 30"-300", 160W/3000H, 3Kg	60.41	82,000
Mobile Projectors				
BenQ	PB2120	DLP, 800x600, 1200 lumens, 2000:1 (Full on/Off), 4:3/16:9, 12.29"-240", 150W/2000H, 1.78Kg	59.25	74,900
HP	sb21	DLP, 800x600, 1000 lumens, 400:1 (ANSI), 4:3/16:9, 25"-300", 120W/1500H, 0.99Kg	58.66	90,000
Panasonic	PT-LM1E-C	LCD, 800x600, 1200 lumens, 4:3/16:9, 33"-300" 130W/4000H, 1.6Kg	63.45	85,000
Sharp	XR-1S	DLP, 800x600, 1100 lumens, 1500:1 (Full on/Off), 4:3/16:9, 30"-280", 150W/4000H, 1.45Kg	58.29	99,000

Size and Portability

The HP sb21 was the smallest in terms of volume and weight. It weighed just 990 gm, making it the lightest of them all. It has a neat design and is user-friendly to boot. The heaviest was the BenQ PB2120 at 1.78 kg; the Panasonic PT-LM1E-C was larger, but weighed 1.6 kg.



Sharp XR-1S

How Did They Perform?

A mobile projector will primarily be used for marketing presentations and/or training at a client's end. In the presentation test, the Panasonic PT-LM1E-C and the BenQ PB2120 returned good overall scores. When we measured them over text quality, the Panasonic, HP and BenQ projectors returned good results with good background brightness and finely set contrasts. In the reverse-text test, Panasonic fared better than the rest with yellow, brown and radium green text on blue backgrounds being clearly visible.

The BenQ had problems with the yellow whereas Sharp XR-1S had issues with dark green.

Performance While Displaying Graphs

The next test was for graph quality where Panasonic again proved better than the rest. It displayed green and blue correctly, followed by BenQ and HP which were a little darker. Sharp missed out since sides of the 3D bar appeared black instead of the original colours.

Performance While Displaying Movies

The movie test was where Sharp unit finally left a positive mark—it showcased detailed scenes and better colour reproduction than the rest. The BenQ also put up a good show in movie mode, with nice skin tones both in daylight and good reproduction of detail in the dark scenes. HP and Panasonic projectors performed well but the night scene appeared a tad too dark with these units, which made the background lose details.

DisplayMate Video Edition

In the DisplayMate Video Edition test, where we look for sharpness, focusing and colour reproduction, BenQ was the clear winner. Horizontal and vertical bar resolution was perfect with no moiré at all and the resolution matrix appeared lively and crisply focused. Panasonic also returned good results with very little out-of-focus problems. The HP sb21 disappointed in this test as the resolution matrix was out of focus at its corners.

The BenQ was again unbeatable when it came to differentiating between 16 shades of grey; it showed no ghosting or streaking at all. It also produced red, green and blue brilliantly. Sharp performed better here with no visible ghosting and good resolution of the grey shades. HP and Panasonic had problems differentiating between the 15th and the 16th shade of grey, which appeared as single dark block.

BenQ unit also displayed a perfectly dark screen, along with the Panasonic—no flicker either. Sharp's projector was close behind—its black was not quite black, though. HP returned a mediocre performance with visible flicker and the projected screen appearing a little brighter in the centre than at the corners.

Total Cost of Lamp

Sharp, with a lamp-life of 4,000 hours, costs Rs 5.5 per hour, making it the most affordable in terms of running cost. Panasonic, with Rs 6.25 per hour, was also good. HP's lamp, at Rs 16.60 per hour, was the costliest!

And The Winners Are...

The Panasonic PT-LM1E-C—an LCD projector—turned out to be an all-round performer. It returned good results in the presentation tests, with good colour reproduction and faithful animation. In the movie test, it returned watchable results. The Panasonic, though, is more portable than mobile: it is larger in size than the HP, but does not weigh as much as the BenQ.



Panasonic PT-LM1E-C



Benq PB2120

Lugging it around in a case that can hold a laptop and a projector should not be an issue. With a good set of features and commendable performance, Panasonic earned the *Digit* 'Best Buy' Gold award.

BenQ was the one that took the *Digit* 'Best Buy' silver. A few of its features, as well as its lamp cost, dragged it down to second place. If you are not too budget-sensitive, the BenQ will impress your audience with crisp slides in presentations and faithful movie rendition. ■

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Contact Sheet

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BenQ	BenQ India Pvt ltd	022-25705230	SalesEnquiryIn@BenQ.com	www.benq.com
Canon	Canon India ltd	0124-5160000	VP.Sajeevan@canon.co.in	www.canon.co.in
Epson	Epson India Pvt. Ltd	080-30515000	venkat@eid.epson.co.in	www.epson.co.in
HP	Hewlett Packard India ltd	0124-2566111	saranya.rustagi@hp.com	www.hp.com
Infocus	Genesis IT Innovations Ltd.	080-51280666	sales@gitil.com	www.infocus.com
Panasonic	Panasonic India Pvt ltd	0120-2567045	s.bhushan@npi.panasonic.co.in	www.nationalpanasonicindia.com
Sharp	Sharp India Pvt Ltd	011-26431313	anilsodhani@sharp-oa.com	www.sbsil.com
Sony	Sony India ltd	022-28313333	chiragk@sid.in.sony.com.sg	www.sony.co.in
Toshiba	HCL Infinet Ltd	022-22832016	vrajput@hclinsys.com	www.toshiba.com



145 Your Chance To Beat Osama's Men



149 Father Of The Net



160 Nanotech For Britney

Touched By Tech

Empowering The 'Hood

Young adults from non-elite areas in Delhi discover the fascinating world of computers, and transform the world within their *basti*

Preethi Chamikutty

When a non-government organisation (NGO) and a society for alternate education come together, a unique venture like the "Cybermohalla" takes form. Cybermohalla's main aims include making youngsters aged between 15 and 21 in Delhi's non-elite localities conversant with computers and helping them unleash their creativity while documenting the daily happenings in the *basti*.

Sarai, the NGO, is a research organisation that looks at different ways that social media and emerging technology can be used to eliminate social inequality. Ankur—the society for alternatives in education—has, for the past two decades, been experimenting with various opportunities available to youngsters. Ankur works mainly in the marginalised communities of Delhi, primarily with children, adolescents and women, and they were the ones to approach Sarai to set up Cybermohalla, a move lapped up wholeheartedly by Sarai.

The Project

The Cybermohalla project has its presence mainly in Delhi, and is now being extended to parts of Gujarat as well. Located in the Lok

Illustration Binesh Sreedhar



Nayak Jay Prakash (LNJP), Dakshinpuri and Nanglamachi areas of Delhi, the movement is slowly gathering momentum. The project works with young people in slum areas and working class neighbourhoods. It enables innovative use of computers and digital technology while remaining alert to the imperatives of social and cultural specificity and autonomy.

Started in May 2001, the project has enabled youngsters in the age group of 15 to 21 to come together and reflect on and write about everyday life as they experience it. These youngsters, or "Media Practitioners," as Prabhat, an Ankur representative, addresses them, meet regularly in self-regulated spaces called "Compughars" or Mohalla Media Labs. "We encourage young adults to come and spend their time in these labs and acquire different computer and technology-related skills," says Prabhat.

When they started off, these media practitioners were neither proficient in English nor did they have any computer-handling experience. Today, a year later, they are trained in basic computing and multimedia techniques, using the free GNU Linux.

A year later, the kids are trained in basic computing and multimedia techniques using the free GNU Linux

Photographs Mexy Xavier



Action at the Dakshinpuri Media Lab

The Wheels That Turn The Clock

A typical Cybermohalla Compughar machine	Applications used on the machines
Intel Celeron 1.1 GHz	**CD burning:** k3b
128 MB RAM	**Word processing:** Open Office
40 GB HDD	**Desktop publishing:** Scribus
Onboard Intel 810 graphics card	**Email:** KMail/Thunderbird
Onboard Intel 801 audio card	**Graphics:** GIMP, Inkscape, Blender
Realtek 10/100 network card	**Audio playback:** XMMS, AmaroK, JuK
PS/2 keyboard	**Audio editing:** Audacity, Ardour
Optical mouse	**Video playback:** mPlayer, Xing
15" colour monitor	**Video editing:** Cinelerra, KdEnlive, Kino, JahShaka
	Instant messaging: GAIM, Yahoo! Messenger, Xchat
	Web browsing: Mozilla, Firefox, Konqueror, Opera
	Web editing: Mozilla Composer, NVU
	Games: Tuxracer, Chromium, Lbreakout2, XBill, GnuChess (Xboard)

Tools at work

Students at the media lab use tools such as computers, dictaphones, cameras, pens and notebooks, with which they conduct interviews, record sounds of the *basti*, take photographs and transfer their world as words and images onto the computer. They come together to reflect upon their lives and to share their realities with each other.

The Cybermohalla diaries takes several forms including written text, images and audio fragments. There are several derivatives of the project:

The "Compughar Diaries" is a form of expression for students, and is maintained by everyone. These diaries are the starting points that help generate concepts to create a presentation, a movie or even a documentary. Sound archives include sound bytes from the city, interviews, readings from the diaries and more, while the image archives comprises photographs of the *basti,* their own city and even other cities.

Going techno-savvy, there are hyperlink diaries that are the conversion of the Compughar's flow of concepts and observations through hyperlinked notes, web-enabled through www.sarai.net.

There are also animations that are included in the projects, which are done using GNU Image Manipulation Programs (GIMP). Publications made at the Compughar include wall magazines called "Ibarat," produced every two months and displayed at over 20 places in the *basti*.

Youngsters associated with the project have acquired considerable skill in handling computers, digital cameras, audio recorders and scanners, and have created short animated movies and basic HTML projects using free software applications. Their writings, photographs, sound recordings and animations have been published as a Compughar book, a compilation of ten booklets, five postcards and a CD.

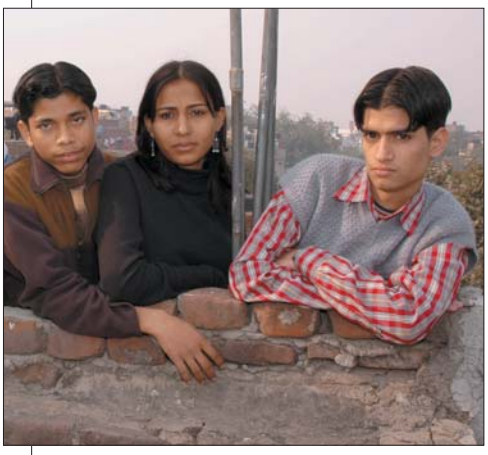
The People

Representatives from Ankur and Sarai were reluctant to take credit for their work. "At Sarai, we are constantly looking at ways to help eliminate creative inequality in our society.
When Ankur approached us with the Cybermohalla project, we thought it was a good way of reaching out to the non-elite, albeit important, spaces within our society," says Jeebesh Bhagchi of Sarai.

Today, there are about 60 people involved in the various projects of Cybermohalla. "Initially, what started off as a pilot project has now extended to many localities within Delhi. Peer-to-peer networking with sustained efforts from our end has resulted in the success of Cybermohalla," says Prabhat from Ankur.

The Media Practitioners here are an interesting group. Seventeen-year-old Luv Anand from the Dakshinpuri lab is here because he was initially a part of Ankur's "Balclub" project.

A student of Class XII, Luv was introduced to Cybermohalla by Vikram, another media practitioner. "I like media lab because it helps me experiment with text, images and sound. We try to see what others cannot in the regular occurrences like fights at the *mohalla* and present them in a creative way using computers."



Luv, Pinky and Raju—the "Media Practitioners"



The recording studio in the media lab

Tripan Kumar alias Raju has been with the Media Lab for the past two-and-a-half years, and has enjoyed every moment of it. He is just 19, and is also studying for his class XII exam, from an open school.

Raju, though, is not the only computer-literate member of his family. "My sister is also attending a computer course," he says. "I am here everyday from 10 am to 4 pm. I like fiddling with the computer and have also opened the CPU once," says Raju.

Of late, Raju has been training on Windows Movie Maker with the help of Emma, a Swede helping the students at the Dakshinpuri media lab. "I have made a three-minute film using some of the photos Emma gave us," he adds.

Kulwinder Kaur, or Pinky as she is known, is the co-ordinator at the Dakshinpuri media lab. At 15, she is responsible for the day-to-day functioning of the lab. "It is my duty to designate work, see who is handling what equipment and keep track of the happenings," explains Pinky. She also organises events for people within the *mohalla* that have eventually become projects for those at the media lab.

The Future

A common element amongst all associated with the Cybermohalla is selflessness. Everybody associated would like it to continue the way it is and for as long as possible.

As far as the program itself is concerned, Ankur now plans to extend it work to regions beyond Delhi. In August, a team of Mohalla Media Lab Practitioners (Lakhmi, Yashoda and Prabhat) visited Ahmedabad to help set up "Urja Ghar," an Oxfam project where "locality media labs" would be set up for writing about the locality.

For two weeks in September, a team comprising representatives from Ankur and Sarai spent time with a group in England to participate in the processes of their lab and share some of the practices from Compughar labs in Delhi.

The interaction resulted in the setting up of an online journal where people can post diary entries about personal experiences and hobbies to create public awareness. This was to further spread the reach of the Cybermohalla.

Although the road seems long and arduous, the first steps have been taken. ☒

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In The Lab...

- Hardware in the media labs ranges from Celeron 566 MHz machines with 128 MB of RAM to Pentium IV 2.4 GHz machines with 256 MB of RAM. A media lab typically has a few machines networked with each other, and a dial-up connection to the Internet. Extra hardware includes inkjet printers, scanners and CD writers.
- Associated hardware that the labs use for their work includes digital cameras (Sony Powershots), Sony MiniDisc recorders, low-cost 35mm cameras, dictaphones, microphones and sound mixers.
- In addition to the Compughars, a special R&D lab has been set up that uses a Pentium IV 3 GHz server with 1GB of RAM to provide a thin client network using Linux Terminal Server Projects. Additionally, the R&D lab has a dedicated audio workstation.
- The labs run a special version of Gentoo GNU/Linux on their computer. They use KDE for their desktop environment and have the choice of working in Hindi or English. They can also choose to work in the GNOME, XFCE and icewm environments. The labs write text in Hindi using the UNICODE specification, and use a phonetic keymap called "BolNagri" developed by Sarai.

1 Col Ad

Check your TQ

Windows XP Free Edition!



1 Name the Swedish co-founder of Skype, the pioneering voice over Internet Protocol (VoIP) company, which allows Internet users to make free PC-to-PC phone calls across the world.
a. Niklas Zennstrom
b. Charles Hodson
c. Nic Robertson d. Robert Dower

2 A fake security bulletin warning Linux users of a "critical-critical" security hole marks the return of a phishing hoax aimed at Linux users. The bulletin was purportedly released by:
a. Red Hat b. Fedora Core 1
c. Solaris d. Microsoft

3 Name the company that released the Everio GZ-MC100 and GZ-MC200, a pair of small, tape-free camcorders.
a. Sony 3 b. JVC
c. Toshiba d. Panasonic

4 Name the new feature released by Google as an add-on for its desktop search tool, which offers advanced filtering and a Windows-like interface.
a. bdSuite b. SearchSuite
c. DeskSuite d. gdSuite

5 Who has Blueprint teamed up with to develop a service that will allow rights holders to host digital media files directly to enabled devices including PCs, audio players and mobile phones?
a. Telewest b. NTL c. Alpha d. BT

6 US scientists are developing mobile phones that learn users' daily habits to become "mobile digital secretaries." The technology developed by MIT has been deployed for trial on which Nokia model?
a. 3220 b. 6600 c. 6100 d. 7250

7 Which e-commerce site can interpret customer inquiries and deduce what they really want by analysing the words people put into the search engine?
a. Thinksahead.com
b. KnowsU.com
c. Nordstrom.com
d. Pointblank.com

8 Name the Windows XP version released in the UK as a free replacement for users of pirated versions.
a. Olive Branch
b. Windows XP Counterfeit Edition
c. Windows XP Counterfeit Project
d. Windows XP Anti-Piracy Edition

9 Which US city plans to provide most of its 15 square miles with Wi-Fi access?
a. Texas b. New York
c. Chaska d. Minneapolis

10 In Seattle, Gaetano Borriello and team have constructed a working prototype of a smart watch that uses an emerging technology to help people keep track of their stuff. Name the technology.
a. WiMAX b. Bluetooth
c. WiFi d. RFID

Got an interesting question? Send it in with the answer to **editor@thinkdigit.com**

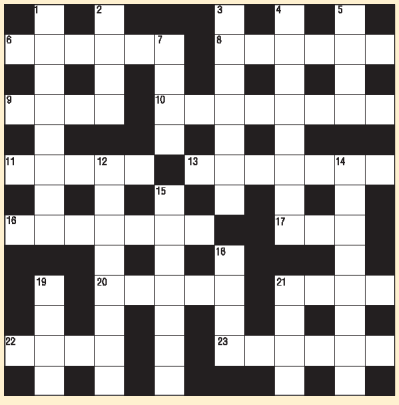
Last Month's Answers

1. The recently launched tool that helps you find files offline is Google Desktop Search
2. The device in question is the Apple iPod Photo
3. Intel announced it has scrapped plans to build a P4 microprocessor, which a clock speed of: 4GHz
4. The subject in question is Digital Literature
5. Google's Hyderabad centre will specifically focus on Adwords
6. The popular e-mail service that is vulnerable to security exploits that might allow hackers full access to a user's e-mail account is Gmail
7. The brand in question is the XBox
8. Who launched the world's first 5-megapixel camera phone? Samsung
9. What unconventional television news network will soon be available on mobiles? Naked News
10. The groups in question ran Web sites that trafficked in counterfeit credit cards and false IDs.

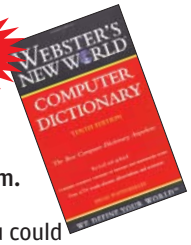
Crossword

Across
6. Short for advertising-supported software (6)
8. Representing data in physical quantities in discrete units deforms a logan (6)
9. Previously owned computer (4)
10. Puts a program onto a computer system (8)
11. Line, bar or a pie-chart? (5)
13. A DOS error message (7)
16. Cell-phone unsolicited e-mail (3, 4)
17. Keep In Touch (abbr) (3)
20. H,I,J,K,L,M,N,O (5)
21. Symbol 'M' upsets game (4)
22. Online audience (4)
23. Commodities bought from a foreign country to reformat the file (6)

Down
1. Double Data Rate Synchronous Dynamic RAM (abbr) (3,5)
2. Frequency range (4)
3. Electronic giant scatters gun mass (7)
4. Large store of information in a computer (4,4)
5. Columns of selectable image 'buttons' returned booty (4)
7. Leave the computer program (4)
12. ******** rearranges spa words (8)
14. Any of the natural numbers (8)
15. Portable personal computers (7)
18. Telecom Regulatory Authority of India (abbr) (4)
19. Multitudes of computers connected to a network (4)
21. Millions of bits per second (abbr) (4)



Win!



Send in your answers to the quiz to **TQ@thinkdigit.com.** If you get all 10 answers right, you could win a **Webster's New World Computer Dictionary** By Bryan Pfaffenberger Published by Pearson Education

Last Month's Winner
Xxxxxx xxxxxxx xxxxxxxx xxxxx

Did you know?

According to Nielsen NetRatings, children between 2 and 11 viewed 36 per cent more Web pages this October than last. Girls went more to IM sites, boys to entertainment sites.

Time For A Promotion?

THE ORIGINAL PREMISE of C&C Generals was that you took on the role of a general commanding his forces against certain opponents. Unfortunately, that never really came through while playing the game. It felt more like Red Alert 2 in true 3D. However, this expansion pack fulfils the promise of Generals by allowing you to be one of nine generals who are spread across the original factions, each having their own strengths, weaknesses, and wisecracks. Fortunately, these differences are not subtle. So a battle plan that works for one will most likely fail for another, even within the same faction.

Mirroring reality, the dark terrorist organisation in the game employs cheap units that appear less powerful. Pound for pound, US weapon systems are indeed much better, but the overall impact of the GLA is always underestimated. The faction is the fastest at assembling an army.

The graphics are really impressive, and the game automatically adjusts to give you playable performance at all times. Units also have had a little brain adjustment. Their AI is now smart enough to retaliate if someone attacks the base. If you have never played Generals, do that first. It's a fun game,



and a big step up for the C&C series. If you don't fall in love with Generals, chances are that Zero Hour won't appeal much more. It simply provides new stuff that lends more diversity to the game, giving you enough variation to keep you playing happily for far longer.

Command & Conquer Generals: Zero Hour
Publisher **EA Games**
Developer **EA Games**
Website **www.eagames.com/official/cc/generals/us**
System requirements **800 MHz CPU, 128 MB RAM, GeForce2 video card, 1.8 GB free space**
Price **Rs 999**

Your Chance To Beat Osama's Men...

CS:CZ IS the standalone installment of the Counter-Strike mod. This time around, your teammates and the enemy are not human, but computer-controlled bots, featured in a series of single-player missions interconnected by the most pathetic storyline in history.

Counter-Strike is essentially a struggle between two teams—Terrorists and Counter-Terrorists (CTs). CS:CZ provides 18 levels; in some you need to prevent the terrorists from planting a bomb while in others, you need to rescue some hostages.

Levels are opened in sets of three—to unlock the next set, you need to secure the current set by beating the terrorists and completing the tasks set in each.

The AI can get pretty bad with idiotic CT bots getting in the way all the time. And they constantly want to perform heroics inspired by Sunny Deol movies!



On the other hand, the more you play this game, the more intelligent the terrorists seem to get.

If you don't have any humans to play CS with, this game is a just about decent substitute.

Counter-Strike: Condition Zero
Publisher **Vivendi Universal**
Developer **Turtle Rock Studios**
Web site **www.cs-conditionzero.com**
System requirements **500 MHz CPU, 96 MB RAM, 16 MB video card, 500 MB HDD space**
Price **Rs 799**

5 TOP SELLING GAMES

1. **NFS Underground 2**
   Rs 1,299
   Gayatri Impex Pvt Ltd
2. **FIFA 2005**
   Rs 1,299
   Gayatri Impex Pvt Ltd
3. **The Incredibles**
   Rs 699
4. **Half Life 2**
   Rs 1,499
   Milestone Interactive Software Pvt Ltd
5. **Sims 2**
   Rs 1,299

List Courtesy **Crossword Mumbai**

Start Your Engines!

THIS IS THE first NFS game driven by a story (at least, something that tries to be one). NFSU2 throws in a whole city with five distinct parts that you have to unlock while following the storyline. Races modes consist of the legendary Drag, Circuit, Sprint and Drift races, with a notable addition being Street X, a combination of the Circuit and Drift modes. Then there's Time Attack, where you have to reach complete certain objectives in the given time.

NFSU2 looks splendid, with fog, and extra particle effects making their debut. The crash effects have not improved much though, even with the introduction of a "different" camera angle. Due to the lack of damage modelling, the only enjoyment you can get the sound of shearing metal. Overall, the graphics aren't much better



than NFSU, and impose a severe performance drop. Satisfy your speed addiction through this game, not in the real world. Drive safe.

Courtesy SKOAR!

Need For Speed Underground 2
Publisher **Electronic Arts**
Developer **EA Canada**
Web site **www.needforspeed.com**
System Requirements **9933 MHz CPU, GeForce2, 256 MB RAM, 2 GB HDD space**

Wired, December 2004

I Spy Your Cell Phone

AND WE THOUGHT they would at least leave Cell phones alone. Annalee Newitz of *Wired* tells us how the tech gadget you use the most is also the most vulnerable of them all to virus attacks and spyware.



It's a beautiful afternoon in Shepherd's Bush, a bustling neighborhood on the outskirts of London, and Adam Laurie is feeling peckish. Heading out of the office, he's about to pick up more than a sandwich. As he walks, he'll be probing every cell phone that comes within range of a hidden antenna he has connected to the laptop in his bag. We stroll past a park near the Tube station, then wander into a supermarket. Laurie contemplates which sort of crisps to buy while his laptop quietly scans the 2.4-GHz frequency range used by Bluetooth devices, probing the cell phones nestled in other shoppers' pockets and purses.

Laurie, 42, the CSO of boutique security firm the Bunker, isn't going to mess with anyone's phone, although he could: With just a few tweaks to the scanning program his computer is running, Laurie could be crashing cell phones all around him, cutting a little swath of telecommunications destruction down the deli aisle. But today Laurie is just gathering data. We are counting how many phones he can hack using Bluetooth, a wireless protocol for syncing cell phones with headsets, computers, and other devices.

We review the results of the expedition in a nearby pub. In the 17 minutes we wandered around, Laurie's computer picked up signals from 39 phones. He peers at his monitor for a while. "It takes only 15 seconds to suck down somebody's address book, so we could have had a lot of those," he says at last. "And at least five of these phones were vulnerable to an attack."

The "attack" Laurie mentions so casually could mean almost anything—a person using another person's cell to make long distance calls or changing every phone number in his address book or even bugging his conversations. There are, he says, "a whole range of new powers" available to the intrepid phone marauder, including nasty viral attacks. A benign Bluetooth worm has already been discovered circulating in Singapore, and Laurie thinks future variants could be something really scary. Especially vulnerable are Europeans who use their mobile phone to make micropayments—small purchases that show up as charges on cell phone bills. A malicious virus maker bent on a get-rich-quick scheme could take advantage of this feature by issuing "reverse SMS" orders.

Bluetooth security has become a pressing issue in Europe, where the technology is ubiquitous. The problem will migrate to American shores as the protocol catches on here, too. But in the long run, Bluetooth vulnerabilities are manageable: Handset manufacturers can rewrite faulty implementations, and cell phone users will learn to be more careful.

To understand in detail how your cell phone could be attacked any moment, visit http://snipurl.com/digitphreak

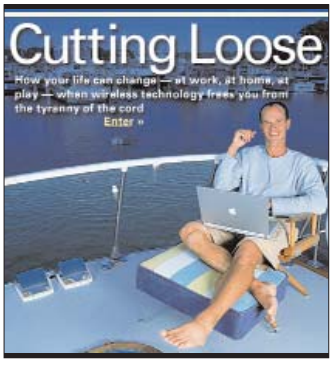
Time, December 2004

The Spokane (Wireless) Word

SOME CITIES ARE born great, while some have greatness thrust upon them. Spokane, a non-descript city in north-western United States is now the wireless capital of the world. *Time* magazine's Lev Grossman gives us a walkthrough of this previously-unheard of city

I rolled into Spokane, Wash., around 6 p.m. on a Tuesday. Spokane is one of those sleepy cities bursting with small-town pride—its residents will be glad to inform you, for example, that it's the smallest city ever to be host of a World's Fair—but it's a pretty quiet place on a Tuesday night. You can look both ways before you cross the street if you really want to, but it's just a formality. I sat on a park bench. A dude on the corner played the saxophone. Some punks on dirt bikes made fun of me. The silence was eerie. Zombie-movie eerie.

But there's a lot more going on here than meets the eye. Spokane is actually a radical experiment in urban wireless technology, a live-in laboratory where city-employed nerds are crash-testing the wireless technotopia of the future. All of downtown Spokane, including the park that I was sitting in, is a massive wi-fi hot spot, a whole neighborhood enveloped in an invisible field of high-volume Internet access that covers 100 city blocks. The same way some libraries and coffeehouses offer wireless Internet access, all of downtown Spokane is a wireless surfing zone. If I'd had a laptop with a wi-fi card, or even a Web-enabled PDA or cell phone, I could have surfed the Web right from that park bench for free.



Sadly, I didn't. That would have shown up those dirt-bike punks.

Spokane is by no means the only project of its kind. It's easy to imagine that by the end of the decade most U.S. cities will exist beneath an invisible dome of wi-fi-"city clouds," in the jargon of the industry. Rio Rancho, N.M., has one, though not on the scale of Spokane's; ditto for Grand Haven, Mich. (see sidebar), as well as Lafayette, Louis and Cerritos in California. And bigger players are moving in all the time. Cook County, Ill., is planning a massive 940-sq.-mi. cloud that would light up all of Chicago. Philadelphia announced a humongous hot zone of its own in September. Los Angeles and New York City are soliciting bids from wireless contractors. This stuff is just too cheap and too useful not to have. It doesn't even stop at the city limits. Out in the sticks, where there are no skyscrapers to get in the way of a wi-fi signal, wireless is even bigger. There's a hot spot in rural Walla Walla County, Wash., that runs 3,700 sq. mi.

I was in Spokane to meet the people behind its audacious experiment, principally a guy named Don Stalter, ceo of Vivato, the high-tech start-up that supplies the technology to make it possible. Stalter didn't found the company; it began with a Hewlett-Packard engineer named Skip Crilly, who lived in the hills outside Spokane and couldn't get anybody to run a high-speed line to his house.

Read more at http://snipurl.com/digitwireless

Newsweek, December 13 2004

It's Junk, And It's On Your PC

BRAD STONE OF *Newsweek* magazine tells us why the humble PC is a sucker for junkware.



Last spring Amy Fenollosa's brand-new Dell laptop morphed into an unruly ad-blasting machine. As she watched helplessly, her screen filled over and over with pop-up promotions for travel deals, cheap mortgages, pornography and-in a bitter twist-tools to help her get rid of unwanted ads. "The pop-ups came incessantly," she says. "I couldn't even open the Web browser or restart my computer. It made me crazy." She brought the laptop to two computer stores before a tech rep at Best Buy finally wiped her hard drive clean and told her to start from scratch.

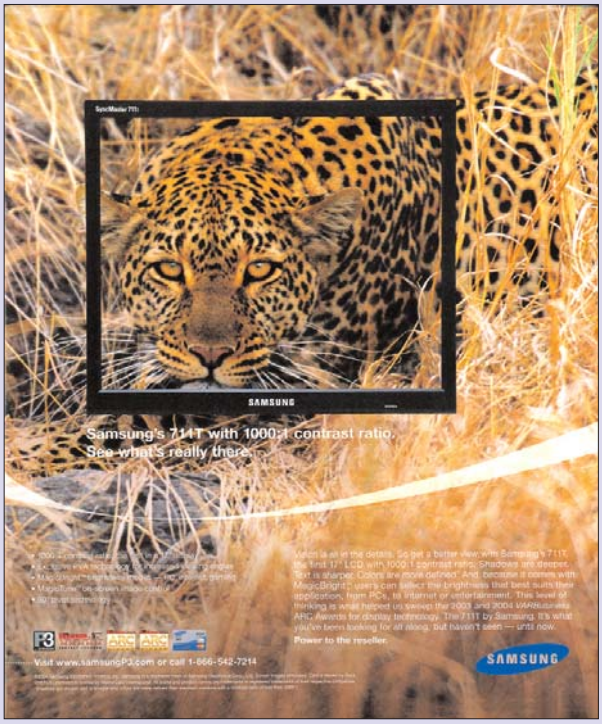
Call it whatever you want: adware, spyware, malware or junkware, but it's wrecking the online experience for millions of computer users. Adware loads itself onto the desktop, sometimes secretly, and can slow a computer to a crawl and fight the user's best efforts to uninstall it. Last October, AOL and the nonprofit National Cyber Security Alliance reported that 80 percent of home computers were infected with adware. It's the new spam; frustrating, time-consuming and even destructive when it opens the digital door to more serious vermin like viruses or spyware-software that can steal personal info like credit-card numbers. The Feds are now taking action. Last fall the Federal Trade Commission sued a Web-site operator for sneaking adware onto user's machines. Next year Congress will likely finalize a bill requiring adware companies to alert users when software is being downloaded and clearly tell them how to remove it. "Adware makes the Internet a riskier place and undermines confidence in it," says Thomas Pahl of the FTC.

Unlike spammers, shady operators who often reside overseas, profitable U.S. companies pioneered and dominate the adware industry. When it filed to go public earlier this year, Silicon Valley-based Claria reported annual profits of $35.6 million on revenue of $90 million (it later withdrew the offering). Evidently, mainstream advertisers, such as Orbitz and American Airlines, pay well for their ads to appear right on the screen, often at the moment a user begins researching vacation plans.

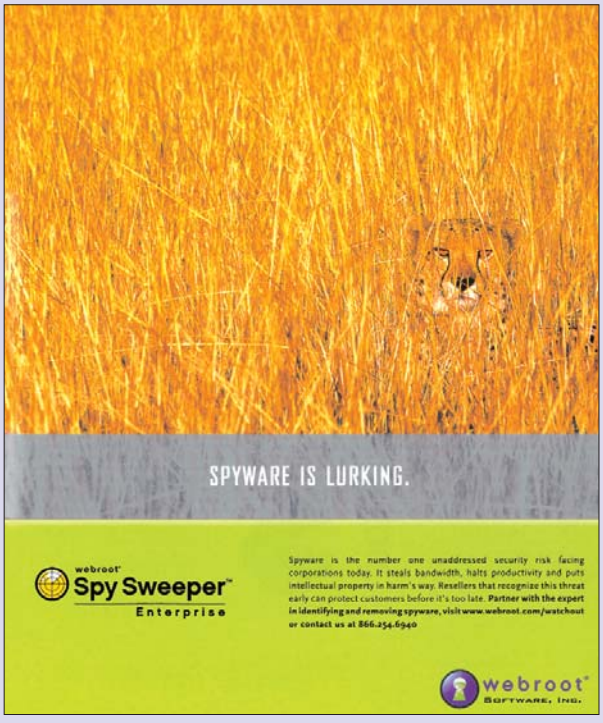
With new regulations on the horizon, adware firms are now scrambling to clean up their act. This fall, Bellevue, Wash., adware firm 180solutions appointed a "chief compliance officer" to oversee its business practices. Last April, the once-secretive New York firm DirectRevenue raised $20 million from Insight Venture Partners, a well-known venture-capital firm that has Google CEO Eric Schmidt on its advisory board. DirectRevenue CEO Joshua Abram says he is now committed to having "clear relationships" with consumers, branding all of his ads and making it easy for users to uninstall his software.

But a review of DirectRevenue's business practices reveals some of the challenges that adware firms face. To get its software onto 20 million computers, DirectRevenue has violated several of the provisions being considered in the proposed laws. The majority of its pop-ups contain no obvious sign that they come from DirectRevenue, and its adware is often difficult to uninstall. Abram points to his site, MyPCTuneup.com, which will remove the adware. But pointers to that Web address are buried deep inside the multipage user license agreements (ULA) users can peruse when they download free software like a screen saver, which contains DirectRevenue's adware. The ULA also warns consumers not to remove the software with anti-spyware tools or it will reinstall itself.

The full article is at http://snipurl.com/digitpc



The Samsung Safari!
Remember, if you want to avoid becoming dinner when on your African safari, you need to carry your Samsung 17-inch LCD with you!



The Hunt Is On
Keeping with the big cat theme, this advertisement does well to bring out the camouflage and spying properties of spyware. Get yourself a spyware cleaner... Now!

Britney Tops Search Again
For the third time in four years, Britney Spears claimed the title of most searched-for person on the Web in 2004, according to tallies by America Online. The highest-ranked movies were *Harry Potter*, *The Passion of the Christ* and *Lord of the Rings*.



Robo Sapiens!
Researchers in South Korea have developed a humanoid robot that responds to human voices and can speak. HUBO can walk slowly, and can move five fingers. The HUBO research group has spent three years and about $1 million developing the robot.



Escape

POP GOES THE AD

1 In 20 Do Not Mind Pop-Ups!

Surprise! Surprise! According to a recent survey by useit.com's Jakob Nielsen, 95 per cent of users hate pop-up ads. Surveys of this kind have been done before, but none have approached the kind of accuracy that Nielsen has in this latest survey.

Some of the survey results are published here.

The figures, to say the least, are intriguing. If only 93 per cent of respondents responded "negatively" or "very negatively" to ads that do not have a "close" button, it has to be concluded that the remaining seven per cent either enjoyed random ads on their screen with no close button, or, interestingly, were neutral to them. What kind of idle surfers are these?

Also, it seems from the table that 21 per cent of users are, again, either positive or neutral about ads that float across the screen. Now that *is* a large number!

Ad Design Element	Users who disliked it (%)
Pops-up in front of your window	95
Loads slowly	94
Tries to trick you into clicking on it	94
Does not have a "Close" button	93
Covers what you are trying to see	93
Moves content around	92
Occupies most of the page	90
Blinks on and off	87
Floats across the screen	79

THE SITE THAT CRIED WOLF

Bush Arrested

Google News recently featured a top story that Canada had arrested US President George W Bush in Ottawa and that he was charged with war crimes. No, really!

Well, what happened was that the source was a satire site called Axis of Logic, and Google's crawlers listed the news story missing out on the fact that it was from a satire site. Since it was up there on Google News, the obvious question is whether anybody believed the story. Apparently, some did. There were a few postings on some groups by people who believed it.

One poster asked, "Don't these Canadians realise that we saved their a** in the last two World Wars?" Going further, one concerned woman even asked if there was someplace she could send money to help bail out the Prez!

Just one of the perils of living in a world where machines do everything for you.

UNUSABLE!



microsoft.com/india/windowsxp/

What would you do if you wanted to purchase, online, a copy of Windows XP? Head to Microsoft India's site, of course. But at the page mentioned above, for some reason, when you click "How To Buy", you are taken to the Volume Licensing Home Page. This includes "Licensing Overview", "Software Assurance", and other such stuff. *I just want a single copy, dammit!* But there's no way you can get a copy of Windows XP from this site.

Win!

My Desktop

Think you have the most beautiful, most innovative desktop around? Send it to **mydesktop@thinkdigit.com,** and Digit will publish the most eye-catching of them each month.



The winner will receive a KUSBDTI/128FE USB stick worth **Rs 1,300.** This month's winner is **C. Prakash.**

Sponsored by Kingston



WE SURRENDER: Prakash's desktop makes us throw away our guns in fear!
Sent by **C. Prakash**

RIVALS IN LOVE

Firefox Loves Microsoft

It's Google's fault again, really. Read on. In the Firefox browser, when you type in a double http://, such

DigiPick of the month

Your friendly neighbourhood repair shop!



This month's winner is David Paul from Nagpur

Integral Optical Mouse

by Travel Pac

It is an optical laser mouse, 800 dpi and USB connector for predominantly laptop users with a three years warrenty agt manufacturing defects. It comes with optical glow scrollers and is compatible with windows NT/2000, 98SE/ME, XP, MacO/S 8.6 or later. The rectractable cord can be stored inside the mouse.



WIN!

A World Connect adaptor by Travel Pac worth Rs 1,150 just by sharing an amusing picture with a tech angle to it. The picture should be shot by you, and should not have been published earlier.
Send your picture to **digipick@thinkdigit.com.**
The prize-winning picture will be published each month.

as in http://http://www.thinkdigit.com, what do you expect? A "Page Not Found" error, of course, or something to that effect. Instead, you are taken to Microsoft's Web site. Try it!

What really happens is that when Firefox is faced with an address it doesn't understand, it takes Google's help—as in the "I'm Feeling Lucky" option. Thus, if you type in http://ftp://thinkdigit.com, the keyword noted is "ftp," and you are taken to the homepage of the CuteFTP FTP client.

But then again, why should the "http" lead to Microsoft's site? Apparently, Google is convinced that "http"— meaning virtually the entire Internet as we all know it—is related to Microsoft, in a sense.

MS SEARCH FASTER

What MS Didn't Tell You...

Microsoft recently released a beta version of its own desktop search, similar to Google's. The funny thing is that in Windows XP and 2000, the features required to do fast hard disk searches are already there. You just haven't ever used them—and that's because MS didn't tell you how to.

You probably know about XP's Windows Indexing Service, which archives files for "fast search". And you have also probably noticed that the search is not really fast. In fact, it's not fast at all. We talked about this in the December 2004 issue of *Digit*—in the 'Tech Nightmares' section, and suggested installing Google Desktop Search because XP's search is too slow.

Now here's something we didn't know then: you can actually use the fast Indexing Service. Here's how: turn on the Indexing Service, and leave it on for a few hours so that all your drives get indexed. Then, open the Windows "File Search" box. Now, type only in the space labelled "A word or phrase in the file".

To find a word inside a file, simply prefix it with "!" and to find a file with a certain name, prefix it with "@filename". So if you want to find documents with the word "Digit" in them, you would have to search for "!Digit". This works lightning fast—just like Google's Desktop Search!

Coming back to the question—why did MS hide this vital information from us? The new desktop search tool uses basically the same thing, with a nicer interface. Strange stuff!

FINAL MESSAGE

Hacking While On Death Row!

Two years ago, Imam Samudra was charged with engineering the devastating Bali nightclub bombings and sentenced to death. When Samudra published his autobiography this fall, the fact that it contained virulent justifications for the Bali attacks was not surprising.

But at the end of the book is a chapter of an entirely different type, titled "Hacking, Why Not?" Here, Samudra urges fellow radicals to take the holy war

People Who Changed Computing

Vinton Cerf

The year 2004 marked the 30th anniversary of the publication of the first paper on the Internet. Titled "A Protocol for Packet Network Intercommunication," co-authored by Vinton G Cerf and Robert E Kahn. Little did people know then that this research effort would spawn countless initiatives by individuals and organisations to explore the applications made possible by a network of hundreds of millions of machines.



It's a lovely coincidence that the Father of the Internet should have a name that sounds the same as "surf". During his tenure from 1976 to 1982 with the United States Department of Defense's Advanced Research Projects Agency (DARPA), Vinton Cerf played a key role in leading the development of Internet and Internet-related data packet and security technologies. This included co-designing the TCP/IP protocol with Kahn. It is not an exaggeration to say that without TCP/IP, there would be no Internet as we know it now. Cerf's working TCP/IP architecture became the official protocol suite of the ARPANET in 1982.

In December 1997, he, along Kahn, was presented the US National Medal of Technology by former President Bill Clinton.

Cerf's own words on "How the Internet Came to Be" are at http://snipurl.com/digit_net.

Bluff
YOUR WAY THROUGH

3D Animation

Make no mistake about it—3D animation is very techy. Essentially, try and convince your audience that you can create a 3D scene. Of course, you'll need to throw in the word "Maya" somewhere.

Motion Capture: Be sure to refer to it as "MoCap", which sounds cool. Mention the Gypsy MoCap system. Say, "MoCap saves time. Simple ambient animation is much easier when MoCapped than if the subtleties where animated by hand. Mocap also easily captures nuances." Remember that the Gypsy system consists of wearing a spaceman-like suit that captures the movements of the wearer.

Gait Cycles and Animation Paths: These are basically the sequence of steps that an animated character goes through. Speak as though you know how to manipulate these, using words such as "interpolation": "With motion editing, you can manipulate body angles and smooth transitions between trials that were joined by interpolation. A single gait cycle could be blended with itself to create an endless walk."

NURBS: NURBS modelling is advanced stuff. So you say, of course, "Man, NURBS is advanced. The toolsets are too complex." Then you continue: "NURBS are basically ideal curves whose shapes are governed by control vertices. The control vertices do not lie on the curve." Since it really *is* advanced, excuse yourself with, "Well, it's difficult to explain it to you beyond that. You basically have to think about lines and surfaces in a differently—I can't explain it."

And finally, when faced with a tough question such as one about muscle and bone animation, simply refer your audience to the Web, saying, "There's tons of tutorials out there for muscle and bone animation..."

A Distro, A Download, A DVD

DIGIT DIARY

Our friends ask us: You guys work at a tech magazine. Bandwidth must be flying, right? Wrong. Ask Ahmed, the guy who downloads stuff for the DVD. This time, we decided to surprise our readers- give them the biggest Linux distro ever on a Digit DVD. We decided to devote 2.3 GB to Fedora Linux, one of the most sought-after Linux distros the world over.

And so with much enthusiasm, Ahmed began the download. Until about 10 minutes passed, and he began his monthly fight with Ajay, Digit's sysadmin, over bandwidth. Ajay, like all sysadmins across the world, has long embraced the endearing quality of the sages of the past—nothing moves him, nothing affects him. Give him the choicest of swearwords, and like Lord Krishna bearing the thousand insults of the irascible King Shishupal, Ajay stays put and gets on with life.

Other people hoard money; Ajay hoards bandwidth. And Ahmed, who believes in sharing whatever you have, is not amused. He then throws his weight around, increases his decibel level, shakes Ajay out of a technological reverie, and manages to upsurp some amount of bandwidth.

Fedora Linux, dear reader, is a result of this historic showdown between Ahmed and Ajay. Download it right now from the DVD until we sort out the fight for next month's DVD!

into cyberspace. He asks them to attack US computers with the aim of committing credit card fraud, called "carding". There is even a chapter that provides an outline on how to get started.

"The worry is that an army of people committing cybercrime could raise a great deal of money for other activities that terrorists are carrying out," said Alan Paller, research director of the Sans Institute, a US Internet security training company.

Indonesian police said Samudra's laptop revealed an attempt at carding, but it was "unclear whether he had succeeded". Now here's a man dedicated to his beliefs. Even while on death row.

LOOK STRAIGHT!

Upskirts And Downblouses Banned

Saudi Arabia banned camera phones a while ago. Although the US is not adopting so drastic a measure, there are privacy concerns being raised about the new devices, which have led to the US Congress passing a bill that would levy a heavy fine and/or prison time for those who take photos or videos of people that, without consent, expose underwear-covered body areas.

Hanan B Kolko, a New York civil liberties lawyer, said about the bill, "At least theoretically, there is now federal protection available so people don't unknowingly have their private parts photographed, downloaded and transmitted the world over."

One caveat is that the legislation would only apply in federal jurisdictions, such as Federal buildings, National Parks and Military bases. However, exceptions have been provided for law enforcement, prison work and intelligence.

Lawmakers say that the use of hidden recording devices such as pinhole cameras has been favourite amongst peeping Toms for years, but that the proliferation of tiny cell phones that can take pictures and shoot video has taken the crime out of bedrooms and bathrooms and into public places.

This indicates that camera phones in the US, as in Saudi Arabia, are seen as "spreading obscenity", in a sense. Conviction would mean a fine capped at $100,000 (Rs 45,00,000) and/or a prison sentence of one year.

STRESSBUSTER

Destroy And Relieve Stress

A Spanish junkyard has come up with a novel post-modern stress therapy offering. For –40 (Rs 3,900), stress-weary people can vent their frustrations on stuff such as cars, computers, and cell phones—modern life's all-pervasive irritants. Naturally, some people like to affix their bosses' photographs on the stuff they are destroying.

At the junkyard in Lubia, 160 kilometres north-east of Madrid, there's plenty of stuff to smash, of course, but the yard also provides the necessary equipment— helmets, sledgehammers, goggles. Heavy metal music is also played while customers do their act as part of "damage therapy" sessions that are being organised by a group called StopStress.

StopStress co-founder Jorge Arribas told *Reuters*, "Some people even bring photos of their bosses and put them on top of the cars before they start hitting them with their hammers."

For the –40, customers are given up to two hours in which to wreck stuff.

whatwerethey thinking.com



http://john.cavaliers.org/boring.html

Some people are born boring; others, like John Ingram, thrust boredom upon the rest of the world. And so, as we tread upon the gargantuan bog called the Internet, we slip and wonder: Why? Why did John Ingram create a site that has nothing but just 413 (exactly) words of text? Why did he create a site that has no meaning, no reason to exist, and no way to earn him even a cent, forget a fortune? But it takes all kinds, and Ingram is one of those. He is rational in his thought, grammatically correct in his writing (although for some reason he hates capital letters), and has enough reasons to keep the world's most boring site alive at all times since its "founding" in 1996. Is that why his site has now been translated into 12 languages including Finnish, French, Swedish, Norwegian, and, hold your breath, ladies and gentlemen, Pig Latin. World War II is obviously history since here we have a German as well as a Hebrew translation sitting right next to each other. The site, Ingram informs us, was created in DOS-edit (yes, you can do that!), and was meant to escape the humongous GIF-animated and Flash sites. This is where you come for a break after spending hours and hours visiting various sites. A sort of virgin beach in the Seychelles after visiting the crowds of New York, Bangkok, Singapore and Hong Kong.

A CASE OF TOO MUCH

"Digital Obesity" In The UK

If you could equate the data stored on devices with physical weight—for example, equate a gigabyte of data to a truckload of paper—then, reports the BBC, Britons are growing "digitally obese", meaning, they are becoming inveterate data-hoarders. "Gadget lovers are so hungry for digital data many are carrying the equivalent of 10 trucks full of paper in 'weight'," according to the story on the BBC News website.

The Toshiba study that came to the "digitally obese" finding said that more than 60 per cent of Britons kept 1,000 to 2,000 music files on their devices.

"Britain has become a nation of information hoarders with a ferocious appetite for data," said Martin Larsson, general manager of Toshiba's European storage device division. "As storage capabilities increase and the features and functionalities of mobile devices expand to support movie files and entire libraries of multimedia content, we will all become virtually obese," he told the BBC News Web site.

"Consumers are driving the move towards smaller devices that have greater functionality, and industry is trying to keep up," said Larsson. "People are looking for more than just phone calls and text messages—they want things like Web browsing, e-mailing, photos, music and more."

Several factors are fuelling this increase in the amount of data that people are storing: falling cost per gigabyte, increasing capacities of hard drives and other data devices, and the growing ease of file transfer from device to device. ■

Compiled by Ram Mohan Rao

Blog WATCH

Here's taking a look at a few riveting posts from the world of blogs. This month, we look at Desktop Search, just after Microsoft released its beta version. But then, what exactly does "beta" mean? Robert Scoble fires off on *that* topic. Then, there's a sobering post for Mac users who think *nix makes their machines more secure. And finally, a history Professor's blog on the Middle East.

Michael Gartenberg
http://snipurl.com/bejg

Desktop Search
There's a lot of buzz around desktop search these days, with Google having released its version some time ago, and Microsoft releasing its beta version a few days ago. It turns out that Microsoft's desktop search will just be an interface for a feature that is already there in Windows XP and 2000, but that's a different matter. Gartenberg asserts that Desktop Search is not a new thing, and that what's interesting now is "the relationship of these things to web search and the implications."

Robert Scoble
http://snipurl.com/bejh

Does "beta" mean anything any more?
Robert Scoble works at Microsoft as a "technical evangelist." Here, he offers his personal opinions on a variety of things. For example, there's a Desktop Search reviewer's guide, a list of news search tools he uses, and so on. In "Does beta mean anything any more," he laments: "Google calls everything
beta. Heck, ICQ has been calling itself beta since 1996."

Look around you for all the betas—for example, Amazon even calls its new stores, such as sports equipment, "beta." So—what does "beta" mean to you? Head to Scoble's blog and have your say.

drunkenbatman
http://snipurl.com/beji

Yin & Yang
Interesting snippets from this blog post:
"The vast majority of Malware, viruses and worms doesn't come about via technical inferiority, or even the other platforms being inherently more secure."

"Something that can be hard for Mac users to wrap their heads around is that when you get down to it, Windows and OS X are more alike than they are different."

"The big thing Mac users crow about with regards to OS X is 'It's based on *nix, so it's much more secure.' That's fine to say, but what does it mean?"

It's a long post, but worth reading.

Juan Cole
http://www.juancole.com/

Thoughts on the Middle East, History, and Religion
"Will there ever be peace in the Middle East?" is what we all want to know. Here's a take by a Professor of History on a wide range of subjects, complete with a historical perspective on what goes on in the region and why—and what role religion has to play in all of that.

Some of his recent posts: "Iraqi Jews before 1948," "Opinion Polls in Iraq", "Assassination by Poisoning a Chancy Matter", and others of interest in these times. A must-read for those interested in the Middle East, and want an informed, disinterested opinion.

ycr007
Resident Techie
Location: **Hyderabad**

I think the time is right now to discuss Members' Experiences of the past year.And No I am Not Talking about personal/private Experiences here. I Know very well that

TDF is a tech forum.

The Year 2004 was a Mixed bag of a year (Actually all Years are Like that,Rarely does a year come Which turns out to be a UtterlyGreat/Worst one)

It saw the Govt.Announce the Broadband Policy which was a pointer of the future.Then there was this "Blatant Misuse of Technology" Debate over The MS/Baazee Scandal.....

So all I want to know is that what is the single Piece of Technology-Related

News/Event/Happening/Announcement /Policy etc that has influenced your tech-Life in One way or another?

****

ashok
Resident Techie
Location: **Hyderabad**

As I said before in another thread...Mozilla Firefox has been the best piece of news for me....As was the Govt.'s Broadband Policy.....AMD's Emergence was also a Good piece of News....And How could I forget Gmail.....For me that was the Best of the Lot...

****

Wizard
Digitized!
Location: **Chennai**

I got loads to tell :p

Entered Buisness
DAD got me a Bike
Got many new games
Learnt to save money
Got many online friends
Got myself a Creative 4.1 Inspire ...5.1 sound blaster ,..120 GB HDD...and an xtra 256 MB RAM
Later Got a Geforce FX 5200 card
Was made the Microsoft Student Champ
Tings went on.....Got a DVD ROM and a new cd writer
Exploited my trading capabilities and got my DREAM mobile , a Nokia 6600 (last week)
Got myself a bluetooth dongle and it works great

****

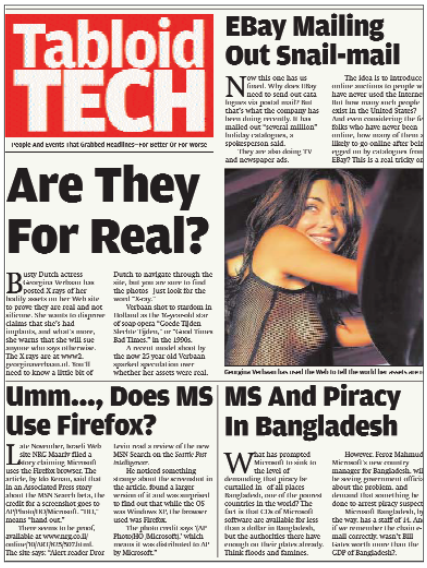
vysakh
Digitized!
Location: **MARS**

not much
good things:
> Jan 1 2004--->NFS UG
> RAM----->128 to 384
> Passed 10th board exam
> more and more games
> diGit DVD

People In Glass Houses

I have been a *Digit* reader (and indeed several Indian magazines) for a long time. I was really surprised and hurt by your comments in the news article on MS piracy in Bangladesh. The news article as part of *Tabloid Tech* said: "Think flood and famines" when referring to Bangladesh.

While I admit that my nation Bangladesh is one of the poorest countries in the world, here are a few figures that will speak for itself, and prove that Indians should not look down upon my country. I am quoting these figures from an Indian newspaper, The Hindu: Infant mortality rate: 51/1000 Bangladesh, 67/1000 India; Percentage of children vaccinated against TB: Bangladesh 95, India 81; Percentage of population that has access to drinking water: Bangladeshi 95, India 84; Percentage of population that has access to hygienic sanitation: Bangladesh 48,


Tabloid TECH

People and events that grabbed headlines—for better or for worse

Are They For Real?

Busty Dutch actress Georgina Verbaan has posted X-rays of her healthy assets on her Web site to prove they are real and not silicone. She wants to disprove claims that she's had implants, and what's more, she warns that she will sue anyone who says otherwise. The X-rays are at www.georginaverbaan.nl. You'll need to know a little bit of Dutch to navigate through the site, but you are sure to find the photos just look for the word "Kerst."

Verbaan shot to stardom in Holland as the 'boyfriend' star of soap opera "Goede Tijden Slechte Tijden," or "Good Times Bad Times," in the 1990s.

A recent model shoot by the now 32-year old Verbaan sparked speculation over whether her assets were real.

Georgina Verbaan has used the Web to tell the world her assets are r

EBay Mailing Out Snail-mail

Now this one has us fazed. Why does eBay need to send out cata logues via postal mail? But that's what the company has been doing recently. It has mailed out "several million" holiday catalogues, a spokesperson said.

They are also doing TV and newspaper ads.

The idea is to introduce online auctions to people w have never used the Interne But how many such people exist in the United States? And even considering the fe folks who have never been online, how many of them a likely to go online after bei egged on by catalogues from EBay? This is a real tricky qu

Umm..., Does MS Use Firefox?

Late November, Israeli Web site NRG Maariv filed a story claiming Microsoft uses the Firefox browser. The article, by Ido Kruzon, said that in an Associated Press story about the MSN Search beta, the credit for a screenshot goes to [illegible]@Microsoft. "111," means "hand out."

There seems to be proof, available at www.nrg.co.il /online/7/ART/919/707.html. The site says: "Alert reader Dror Levin read a review of the new MSN Search on the Search Engine Intelligencer.

He noticed something strange about the screenshot in the article. Found a larger version of it and was surprised to find out that while the OS was Windows XP, the browser used was Firefox.

The photo credit says "(AP Photo/HO, Microsoft)," which means it was distributed to AP by Microsoft."

MS And Piracy In Bangladesh

What has prompted Microsoft to sink to the level of demanding that piracy be curtailed in all places Bangladesh, one of the poorest countries in the world? The fact is that CDs of Microsoft software are available for less than a dollar in Bangladesh, but the authorities there have enough on their plates already. Think floods and famines.

However, Faraz Mahmud Microsoft's new country manager for Bangladesh, wil be seeing government officia about the problem, and demand that something be done to arrest piracy suspect Microsoft Bangladesh, by the way, has a staff of 14. An if we remember the chain e-mail correctly, wasn't Bill Gates worth more than the GDP of Bangladesh?.

India 28; Maternal mortality rate: Bangladesh 380/100000, India 540/100000; Primary school enrollment: Bangladesh 87 per cent, India 83 per cent.

These figures speak for themselves as to which country is better off in terms of human development. I sincerely hope that Digit, as a responsible and respectable magazine, should refrain from making a sweeping remark about a poor but proud nation.

Having said that, I would like to point out that you were absolutely right about software piracy in Bangladesh—almost all of Microsoft's software sold are bootleg copies. But so is the case in China, Vietnam or even India.

Anisur Rahman,
Professor of Surgery
Bangladesh Medical College

Dear Dr Rahman,
The news report you refer to in the December issue of Digit was part of Tabloid Tech, a light-hearted page meant for the reader to wind down after more than 100 pages of technology reading. All articles in Tabloid Tech are written tongue-in-cheek, and are meant to be taken in the right sporting spirit. Why Bangladesh, we write tongue-in-cheek about India, the US, the UK, and just about any country that gets caught in our radar! We regret that the report has hurt your sentiments, and apologise for the same. But, at the risk of repeating ourselves, we would like to clarify that there was no malicious intent, or any intent to degrade any country, least of all one of our neighbouring countries.

— Executive Editor

Kudos On The December Issue

I was hugely impressed with the December issue of *Digit*. The Encyclopedia Britannica was a surprise, and so was the combo-drive which I had ordered through Digit. Coincidentally it reached me the same day as the magazine, making it the icing on the cake.

But this *dil maange more*. Here is my wishlist for the New Year. I think Digit can do more, much more than it has done until now by increasing the number of pages, and introducing a mega poster of games or celebrities or any technology product. I still miss some of the old pages which taught us how to fix computer peripherals. The game reviews, too, are small, especially for a reader like me who wants to read more and more reviews. Also, please provide games of every genre on the DVD month after month.

Does it sound like I am only complaining or asking for more? No sir, Digit was and continues to be my favourite magazine, and I know it will never let me down.

Anshul Thakur
via E-mail

The December issue was brilliant. Lots of features, lots of pages, lots of goodies. I



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particularly liked the *Tech Review 2004*, which had all the elements you ever wanted in a year-end issue. But where did the DVD jewel case go? Until November 2004, the *Digit* DVD came in a jewel case. This stopped in the December issue. Why? Also, why don't you give *avast!* free anti-virus software, and maybe the *Google Desktop Search*?

Sudhir Banerjee
via E-mail

Dear Anshul and Sudhir
Thank you very much for your kind words. We had mixed feelings bringing out the December 2004 issue—on the one hand we were happy we brought out such a great issue, on the other the perpetual feeling whether our readers would love it. But the response was phenomenal, and our issue was a sellout even before December 20, 2004.

Meanwhile, the December issue had more than 200 pages, and this issue has more than 160. As India's leading technology publication, we have always believed in giving our readers more bang for their buck. This is more than evident in the number of pages, and the amount of software and games we bung into the DVD. So you are right, Anshul. Digit will never let you down. Sudhir, as far as your requests are concerned about *avast!* and *Google Desktop Search*, all you need to do is reach out to this month's DVD right now!

— Executive Editor

Firefox Good, Opera Better

The *Mozilla Firefox* 1.0 review in the December 2004 issue was a nice read. However being an *Opera* user for more than a year, I can say quite confidently that *Firefox* 1.0 is overhyped. Is it really a revolution? I don't think so.
Opera had tabbed browsing, dynamic cache usage and voice browsing much before everyone else. So why didn't anyone call *Opera* as a browsing revolution?

Here are a few things that make *Opera* really really good:
1) It loads pages faster than most browsers because of its superb cache handling feature.
2) It allows you to resume sessions from where you left last time (my favourite feature)
3) Excellent e-mail client M2
4) Allows you to zoom in and out of the pages. The zoom out feature may come handy to tackle annoying horizontal scrolling in some pages
5) It has a basic form filler
6) It has Magic Wand, the user-friendly password manager (another handy tool)
7) The search engine tab which is better than Firefox any day. In fact, in Opera you can even add your own search engine by using a small freeware tool
8) It even has an IRC client, a chat feature and the ability to receive RSS feeds
9) It has fairly advanced voice browsing, along with a pleasing interface and lots of skins
10) Mouse gestures are default in Opera, whereas in Firefox you need extensions
11) It has a small download size, has pop-up blockers, a download manager, etc.



Actually, the media is hyping *Firefox* just because it was developed by the Open Source community. While I admit that Microsoft's domination of the browser industry is being eroded fast because of *Firefox*, *Opera* has also played an important role in making that dent. It is good that people are moving away from Internet Explorer, which many advanced users feel is the worst of all the current browsers.

Meanwhile, thank you for an excellent year-end issue. And yes, it was great to see Agent 001 back after a long break.

Pallab De
via E-mail

Clarification

In the November and December 2004 issues, we ran a contest for 'Check Your TQ', where one lucky winner won a Canon Pixma printer for each month. Many readers wrote to us saying they too answered all 10 answers correctly, but did not receive any printer. This is to clarify that all our contests will have only winner, and if there are multiple all-correct entries, then the winner will be decided by draw of lots.

— Executive Editor

Price, Piracy, Problems

LETTER OF THE MONTH

I use *Windows XP* at home, and like millions of XP users I had to face nightmares while going online for days on end.

Whenever I went online the PC was infected with worms like My Web Search, popups, etc. The very process of using my dial-up connection to connect to the Net made me paranoid. I removed the bugs using *Spybot* when they entered the system again the next day.

When I was in school I had heard that "Eternal vigil was the price of independence". It was only now that I could appreciate its true meaning. In my version, though, I could replace the word independence with "infectionless". Over a period, I gave up surfing! And then it was not possible for me to download the 250 MB security update for XP.

Then I came across link on Microsoft's Web site that read: "Protect your PC in three steps". It was the Holy Grail I was looking for so badly. The site said Microsoft will send a free CD-ROM of Win XP SP2. They even sent me an e-mail confirmation of my order.

After a week or two, the wait ended. I thanked and prayed for dear Bill Gates as I inserted the CD. And promptly came the message: "Your version of *Windows XP* is not registered. Please register blah, blah, blah..." My heart stopped. Indeed my version was not registered, and was installed from a pirated CD. It is a different story that after this, I bought a legal version of XP, and now I can surf the Net without any problems.

It is not my intention to bring to everybody's notice that I had been using a pirated version of XP, but the fact that Microsoft should understand that because of its short-visioned pricing policy, the legal sales of its software will never hit a high in most places across the world. For instance, how many legal copies of XP are there in Indian homes today? It is a question that cannot be buried under the carpet.

Sourav
via E-mail

Tabloid TECH

People And Events That Grabbed Headlines—For Better Or For Worse

Gamer Buys Virtual Land For $26,500

In an earlier issue of *Digit*, we mentioned MMORPGs—massively multi-player online role-playing games—and that people actually spend large amounts of real money buying stuff in these virtual worlds.

And now in December last, a 22-year-old Australian gamer, known only by his online gaming moniker—Deathifier— spent $26,500 (Rs 11,63,000) on an island that exists only in a MMORPG. He bought his virtual property on an online auction. The virtual island includes a gigantic abandoned castle and beautiful beaches, which are "ripe for developing beachfront property."

The game in question is *Project Entropia*, which allows gamers to directly buy and sell virtual items using real money. Players of other titles often use eBay to sell their virtual stuff.

Deathifier's move is not totally for the fun of it, though—he will make money from his investment, since he can now tax other gamers who come to what is now his land, to mine for gold or hunt.

McNealy Thinks Submarine Is Computer

At a keynote address at the Oracle OpenWorld show, in front of an audience of thousands, Sun CEO Scott McNealy mistook a submarine for a computer.

What happened was, McNealy displayed a pic supposedly from "Popular Mechanics" magazine, here on the left, depicting "how people in 1954 envisioned the home computer." His point, of course, was to show how far we've advanced beyond that.



Here's the goof-up: the photograph he used is a doctored picture of a modern nuclear submarine control room.

You have to give McNealy credit, though, for his scepticism: he asked, "Being from Detroit, I have to wonder: what is the steering wheel for?" So he wasn't entirely fooled, you see.

Nanotech For Britney

On December 14, Britney Spears, in mid-air, decided to put her feet up and kicked off her shoes. Literally. But, she was reportedly asked to put them back on because her feet were smelling.



Don't take those shoes off, please!

A passenger aboard the same flight told British tabloid *The Sun*: "The smell was unbelievable. One woman had a word with the air hostess, then three or four others complained."

Nanotechnology may hold hope for Ms Spears. Based in Pennsylvania in the US, NanoHorizons has begun selling a line of metallic nanoparticles that kill odour-causing microbes and can be incorporated into socks. The socks should be out in about a year. Till then, she will just have to keep her shoes on!

The Queen's Pudding On eBay

A worker at Buckingham Palace has been sacked for trying to sell a Christmas pudding gift from Queen Elizabeth on—you guessed it—eBay. Ben Church, 25, who worked as a property administrator at the palace, was dismissed after royal officials learned he had put the pudding from luxury food store Fortnum & Mason for sale on eBay, the *Daily Mirror* reported December 17.

Church put the pudding up for a measly £20 ($39)—a disgrace for a Royal Pudding.

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